

# FLIGHT

The  
AIRCRAFT ENGINEER  
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1152. (Vol. XXIII. No. 4.)

JANUARY 23, 1931

Weekly, Price 6d.  
Post free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY W.C.2.  
Telephone: (2 lines), Holborn 3211 and 1884.  
Telegrams: Truditur, Westcent, London.

Annual Subscription Rates, Post Free.

United Kingdom .. 33s. 0d. United States .. \$8-75.  
Other Countries .. 35s. 0d.\*

\* Foreign subscriptions must be remitted in British currency (See last Editorial Page.)

## CONTENTS

Editorial Comment	PAGE
A Serious Mistake .. .. .	67
The Schneider Position .. .. .	68
French Light 'Plane Record .. .. .	69
Down the All-Red Route .. .. .	70
Royal Aero Club Official Notices .. .. .	72
Track Assembly of Aircraft .. .. .	73
Power Supply for Aircraft Radio Equipment .. .. .	75
Private Flying and Club News .. .. .	76
Gliding .. .. .	77
Air Transport .. .. .	79
Croydon Notes .. .. .	81
Airisms from the Four Winds .. .. .	82
Some Aspects of the Design of Sea-Going Aircraft (Concluded): By A. Gouge .. .. .	83
King's Cup Air Race .. .. .	86
The Schneider Trophy .. .. .	86
Royal Air Force .. .. .	87
Models .. .. .	88

## DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1931	
Jan. 28	"Glider Construction," Lecture, by C. H. Lowe-Wylde, before London Gliding Club
Jan. 28	Association Football: R.A.F. v. Football Assoc. XI., Uxbridge.
Jan. 28	Lloyd's Register Cricket Club Reunion and Dinner, May Fair Hotel.
Jan. 29	"Development and Construction of Sailplanes and Gliders," Lecture, by Herr A. Lippisch, before R.Ae.S.
Jan. 29	"Machining and Working of Stainless Steel," Lecture, by R. Waddell, before Westland Aircraft Soc.
Jan. 30	"Gliding and Soaring," Lecture, by Col. the Master of Sempill, before R.Ae.S., Hull.
Feb. 5 ..	"Wapiti in Australia," Lecture, by Sqdn.-Ldr. C. T. Anderson, before Westland Aircraft Soc.
Feb. 6 ..	De H. Aeronautical Technical School Ball, at Portman Rooms.
Feb. 11	"Future of Aeroplane Design for the Services," R.U.S.I. Lecture, by C. R. Fairey. 3 p.m.
Feb. 11	Association Football: R.A.F. v. Civil Service, Uxbridge.
Feb. 12	"Air Navigation," Lecture, by Capt. N. Macmillan, before R.Ae.S. and G.A.P.A.N.
Feb. 12	"Spinning," Lecture, by S. Scott-Hall, before Westland Aircraft Soc.
Feb. 17	London Aeroplane Club Dinner and Dance, Park Lane Hotel.
Feb. 19	"Heat Treatment of Steels," Lecture by A. L. Williams, before R.Ae.S.

## INDEX FOR VOL. XXII

The 8-page Index (over 6,800 references, plus "Aircraft Engineer" 220 references) for Vol. XXII of "Flight" (January to December, 1930), is now ready and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C.2, price 1s. per copy, net, (1s. 1d. post free).

## EDITORIAL COMMENT



THE announcement has just been made by the Royal Aero Club that it has been decided that this year's race for the King's Cup shall be confined to amateurs, a professional being defined by the Club as "proprietor, partner, director, official or employee of any firm of manufacturers, dealers or operators in aircraft or aircraft engines, or one employed as a professional pilot." Evidently feeling that there may well be cases presenting difficulty in decision as to the interpretation of the term amateur, the Club has inserted a clause in the regulations to the effect that any entry may be refused by the Club without giving any reason. That may mean nothing, or almost anything, according to the use which the Aero Club makes of the rights which it has thus reserved itself. For example, the wife of the managing director of an aircraft or aero engine firm is certainly not necessarily a "proprietor, partner, director, official or employee" of the firm, although if she happens to hold shares in the firm, she may, presumably, be held by the Aero Club to be a "partner" and so debarred from either entering or piloting a machine, or even from being a passenger in it. Or the Aero Club may regard any "second cousin twice removed" relative of anyone connected, however remotely, with an aircraft or engine firm as under suspicion, and may make use of its right to refuse without giving any reason.

But apart from any such difficulties, we think the Royal Aero Club has made a mistake in attempting to keep "the trade" out of the King's Cup race

altogether. If one examines with a little care last year's list of entries, it will be found that something like 50 per cent. of the entries would have been ruled out under this year's regulations, either because of the "professional" regulation, or on account of another stipulation made this year, to the effect that any aircraft entered shall have been registered in the name of the entrant and shall have had its Certificate of Airworthiness issued not later than May 30. For a great race like that for the King's Cup, it is inevitable that quite a considerable number of machines are not finished until about a week before the race, and this must of necessity mean considerable extra work and hurry not only for the handicappers but also for the C. of A. department. We are by no means in favour of the time-honoured system of "finishing a machine on the starting line," but to insist that a machine shall have been registered *in the name of the entrant* by May 30 will prevent any machine from changing hands between May 30 and the day of the race. It is quite obvious that many a potential entrant of a machine for this race will not have made up his mind by May 30 which type he would like to enter, and so it is probable that by this regulation many machines will be kept out of the race. With the stipulation that a machine shall have had its C. of A. issued not later than May 30 we do not quarrel nearly so much. It is not quite fair to either the handicappers or the C. of A. department that a large percentage of machines should come along at the eleventh hour clamouring for a C. of A. and for the handicapper. But as the race will, presumably, be held towards the end of June or early in July, a month's grace does seem a generous allowance to handicappers and "stress merchants." It might have been thought that a fortnight would have sufficed. Any amateur owner of an aircraft, if he desires to "fake" his machine in any way, will have to start early in May, at the latest, to have his alterations made, and as he will naturally wish to save his engine as much as possible, this will mean that he will be debarred from using his machine for two months before the race. As the number of wealthy owners with more than one machine is limited, this means that many who would otherwise have been in the race will refrain from entering. A perusal of the regulations conveys very strongly the impression that the Royal Aero Club, when drafting the regulations, was chiefly concerned with ensuring that the entries list should be as short as possible. Last year 88 machines faced the starter at Hanworth, and some 61 finished the course. It will readily be granted that the efficient handling of so many machines calls for a large and skilled organisation. But as the body governing the sport of flying in this country, the Royal Aero Club cannot escape its obligation to organise this race, no matter how large proportions it may assume. If the club desires to save itself trouble by reducing every aviation event to a little "suburban" affair, the outlook for British sporting flying is sad indeed. If it was desired particularly to encourage the amateur pilot and owner, this might quite well have been confined to entries for the Siddeley Challenge Trophy. To ensure the King's Cup entries list being short by keeping out the aircraft industry is a policy which cannot fail in the long run to damage the race itself by detracting from the importance which it was assuming.

Italians have flown to South America; Italians have challenged Great Britain for the Schneider trophy; Great Britain surrenders it without a contest; shall Latin Americans buy British or Italian aircraft?

#### The Schneider Position

Thoughts something like the above will probably soon be running through the minds of visitors to the British Exhibition at Buenos Ayres. It is not hard to guess the probable answer to the final question. Thus does our Government help trade at a moment when trade needs help more than it has needed it for many a long year. To economise on publicity and on profitable investments when in financial difficulties is an instinct of the worst type of company director, and in that class we must rank the present Government, at least so far as its Schneider policy goes. It is common knowledge that our two successive victories in the Schneider contests of 1927 and 1929 proved excellent investments. The publicity brought far more money into the country than was spent by the Air Ministry in organising the two winning teams; and of that expenditure by no means all was unproductive. The research was profitable, and so was the experience of the pilots. Had the officers and men not been employed by the High Speed Flight, they would all have been engaged on some other form of flying which would only have been doing what the High Speed work was doing, namely, increasing the general efficiency of the Royal Air Force.

A third British victory would have brought the series of Schneider contests to an end, and Great Britain would have won great kudos as the only country which thrice running put winning teams into the air. There was no suggestion of designing new types of seaplane or engine, so the expense for this year's contest would have been reduced by so much.

On the other hand, a victory with machines and engines which were two years old over new types would have seemed to the world incontestable proof of the superiority of British design. Of course, our old machines might not have won; but air experts are well aware that machines which have been developed at leisure are far more efficient than they were when they had only just emerged from the factories, and that they might easily prove faster than new and untried types. So our hopes of victory were not too badly founded.

Just as we were going to press we received a letter from Sir Philip Sassoon, chairman of the Royal Aero Club, which is published in another column. From this it appears that the Cabinet was not actuated solely by motives of economy. The Royal Aero Club believed that it would not have been impossible to raise the sum of £80,000 which had been estimated as the cost to the Government of organizing the defence of the trophy. The committee of the club interviewed the Air Minister and asked whether the Government would undertake the defence of the trophy if the said sum were raised by the club. Lord Amulree has not appeared unsympathetic to the club's requests, and he referred the question to the Cabinet, which merely reiterated its refusal to do anything. The plea of saving the taxpayer's pocket thus falls to the ground. What the real motive of the Cabinet can be we must leave to our readers to guess. We confess ourselves to be completely baffled.

## A FRENCH LIGHT 'PLANE RECORD

Fine Performance by Lalouette and De Permangle

**A**S briefly reported in our last issue, a new record for light sport 'planes was established on January 12, when the French airmen, Marcel Lalouette and Jean de Permangle, using a small Farman low wing monoplane, the F 231, equipped with a Renault 100-h.p. motor, flew from Istres, France, to Villa Cisneros, French West Africa, a distance of some 2,700 km. (1,687 miles) in 22 hr. Their 'plane weighed, when empty, only 398 kg. (875 lb.), and so came within the light tourist class.

The previous light 'plane long distance record was held by the Swiss pilot, Capt. Hans Wirth, who, accompanied by Miss Naumann, made a flight, October 16, 1928, of 1,305 km. (815 miles) from Böblingen, Germany, to Mieschance, Poland.

Marcel Lalouette, this most recent record holder, has made several sensational flights recently. It was he who, a short time ago, conducted the then Prince Carol back to Roumania by aeroplane, where the latter then assumed the throne. Shortly afterwards, Lalouette, in company with Capt.

Goulette, flew a 5-seater Farman cabin monoplane, equipped with a 300-h.p. Lorraine air-cooled motor from Paris to Saigon, Indo-China, and return. On their return trip from there last month the airmen had a distinguished passenger accompanying them, in the person of Governor-General Pasquier, of Indo-China, it being the first time that a high executive official had made such a trip by air.

Jean de Permangle, who accompanied Lalouette on this Istres-Villa Cisneros flight is a young man of a well-known family, who received his pilot's licence only last summer. He is the owner of the 'plane that they used, and is an enthusiastic air tourist.

The Farman low, thick wing type, sport monoplane is termed the F 230, when equipped with a Salmson 40-h.p. air-cooled motor, and is described as the F. 231 when it carries a Renault 100-h.p. engine. The wings, of cantilever construction, are mounted at a slight dihedral angle. The two half wings, on either side, are joined to the centre sections attached to the fuselage by means of metal fittings and secured by bolts and nuts. They are of the caisson type, constructed of wood, and covered with ply-wood. They can be easily dismantled. The fuselage is also of simple rugged wooden construction, covered with plywood. The two pilot seats are installed in tandem, each having a side panel that can be opened or closed, as desired. Both seats are equipped with wind shields, and are installed over the centre of gravity of the central portion of the wing, and are thus furnished with an excellent visibility in all directions. The fuel tank is installed in the fuselage behind the motor. When the 'plane is fitted as a tourist machine this tank has a capacity of 75 litres (17 gallons, approximately). A baggage compartment is installed in the fuselage behind the rear pilot's (passenger's) seat. The landing gear is of the wide split-axle type. The wheels are supported by struts in V form, and are equipped with tyres of 600 x 75.

The characteristics of the Farman F. 231 are as follows:—

Wing spread .. .. .	9.11 metres.
Length .. .. .	6.15 "
Height .. .. .	2 "
Wing surface .. .. .	14.50 sq. metres.



The Farman F.231 Light Plane (95-h.p. Renault) on which the French aviators Lalouette and de Permangle established their record.

The weights when equipped with a Renault 100 h.p., air-cooled motor are:—

Weight, empty .. .. .	380 kg.
Fuel, 75 litres approx. .. .. .	54 "
(This amount is used when the plane is equipped for tourist cruising purposes.)	
Oil, 12 litres .. .. .	12 "
Pilot .. .. .	102 "
Passenger .. .. .	102 "
Total weight .. .. .	650 kg.

### Performances

Ground speed .. .. .	190 km./hr.
Minimum speed .. .. .	70 "
Cruising speed .. .. .	160 "
" Run " at " take-off " .. .. .	80 to 140 metres, according to the wind prevailing.
" Run " at landing .. .. .	60 to 80 metres, according to the wind prevailing.

### Fuel Consumption

Twenty-two litres (5 gallons) of petrol and 1.4 litres of oil per hour when flying at a cruising speed of 165 km./hr.

Flight radius, when equipped as above, 600 km. (375 miles).

The 'plane used by Lalouette and de Permangle on their Istres-Villa Cisneros flight was equipped with a Renault 100 h.p., 4 cylinder in line, air-cooled engine. The bore of the cylinders is 115 mm. and the stroke 140 mm. The crankshaft is mounted on five bearings.

Extra fuel tanks were installed in the fuselage, thus enabling a fuel supply of 550 litres (123 gallons approximately) and 35 litres (8 gallons approximately) of oil to be carried.

This amount of fuel was sufficient for 26 hours of flight with a radius of 4,000 km. (2,500 miles) (no wind prevailing) at an average speed of 150 km./hr.

Thus equipped and carrying the two airmen this Farman F. 231 " took off " from the Istres Aerodrome last week within a space of 350 metres (1,140 ft.).

R. C. W.

### French Air Mail to Indo-China

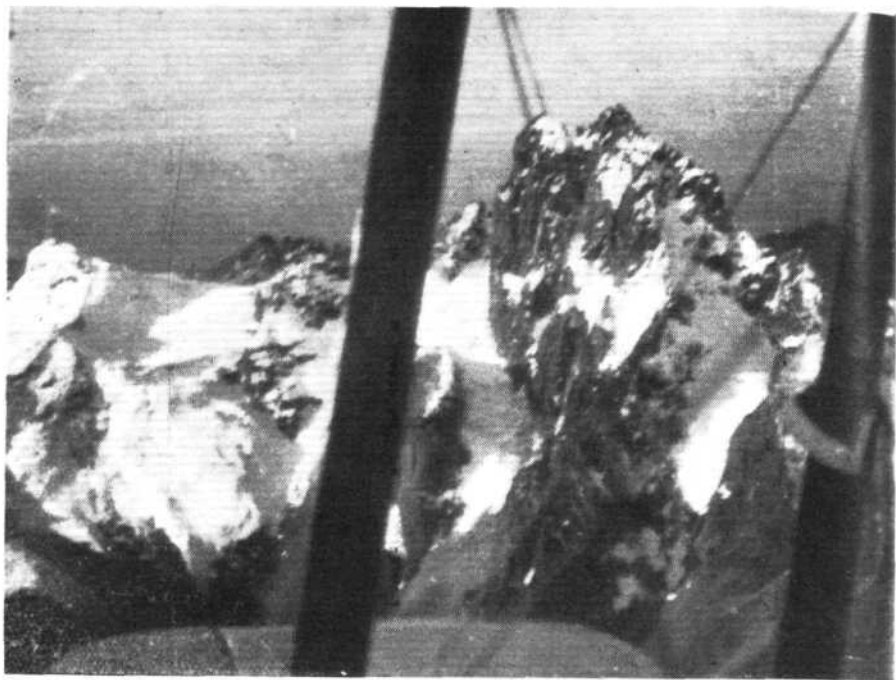
THE regular weekly air mail service from France to Saigon, which was scheduled to start on January 1, commenced operations on January 18. The distance to Saigon is about 7,500 miles and the time allowed for the single journey is 10 days. The route is:—Marseilles-Naples-Corfu-

Athens-Beirut-Damascus-Baghdad-Basra-Jask-Karachi-Jodhpur-Calcutta-Rangoon-Bangkok-Saigon. The Marseilles-Damascus section has already been in operation for two years. Mails for delivery by this service must reach the headquarters of the Air Orient Company, 2, Rue Marbeuf, Paris, before 3 p.m., on Fridays.

## DOWN THE ALL-RED AIR ROUTE

AS we mentioned last week, with the assistance of the Reading Aero Club and the courtesy of the Vaudeville Theatre, Reading, Mr. Tuckett's film was shown on Friday, January 16, for the first time in this country. On that occasion Capt. R. Bateman, the chief instructor of the Reading Aero Club, opened proceedings by a short speech in which he drew attention to the difficulties Mr. Tuckett had had to contend with, particularly in that the film had to be taken single-handed, which meant that the camera was operated with one hand while he was flying the machine with the other. He said that Mr. Tuckett, who had originally learnt to fly at the Port Elizabeth Club, Cape Colony, completed his training with Phillips and Powis, Ltd., at Reading last year, and that the same company had supplied and equipped his machine. Mr. Tuckett himself then, in a short speech, gave an account of his trip, and pointed out that the film covered the same route as is now being opened by the Imperial Airways Services to the Cape, and should therefore be of particular interest. He said he felt that as soon as more was known about this route many people would make use of it, not only in order to save time in their journey, but also for the sake of experiencing the pleasure of seeing this wonderful country with its magnificent views from the air. There can be no air route in the world, he said, which lies over changing scenery such as mountains, lakes, rivers and forests, the views of which are so enjoyable. In conclusion, Mr. Tuckett said that there were, unfortunately, many little incidents of great interest which he could not record in his film, but he said that he was publishing a book in the near future which would contain a full and detailed description of the whole flight. Below we give a short description of the journey by Mr. Tuckett himself.

We understand that Mr. Tuckett is proposing to give a



The summit of Mount Kenya taken at 17,040 ft. by Mr. Tuckett from his Moth (Gipsy I).

lecture tour, and feel certain that his lectures should be of great interest.

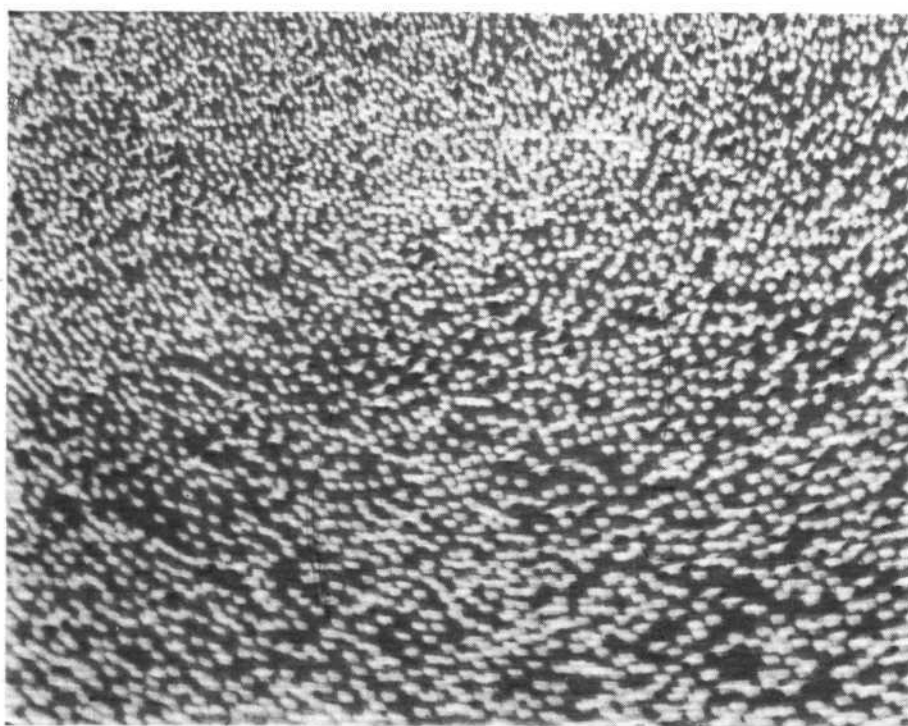
"I set out from Croydon on November 9, 1929, in an endeavour to beat the record then held by Mr. Pat Murdoch of 13½ days from London to Cape Town.

"The flight was financed by Mr. Ernest Anstey, head of South Africa's largest departmental store, Norman Anstey and Co., who is taking a keen interest in South Africa's aviation affairs. I decided to take a full-size cinematograph film of the trip, and for this purpose I obtained a Bell-Howell cinematograph camera with a Dalymeyer 2.9 lens, and I had a door made on either side of the rear cockpit, which enabled me to hold the 'stick' with one hand and bring my cinematograph apparatus into operation through either of the doors with the other. The idea worked splendidly, and I was able to obtain some remarkably fine scenes with comparative ease.

"The film starts with taking delivery of my machine at Stag Lane Aerodrome, and from there jumps to Terracina, on the north of the Gulf of Naples, where I was forced to land on account of a violent storm ahead. My cameras had been sealed up by the customs authorities at Croydon, and were supposed to remain intact until I left Europe. The residents of Terracina, however, wished me to take films of them, so foolishly I broke the seals and exposed 100 ft. of film. I was nearly arrested by the Italian Air Force at Naples for doing this, and was detained for three days whilst the film were developed and inquiries made concerning me.

"The next scene jumps to crossing Mediterranean Sea, where my oil gauge dropped to zero through an oil leak when I was 250 miles from the coast. It speaks well for the Gipsy engine that she flew for four and a half hours with practically no oil until I was able to effect a landing alongside a fortress at El Daba, on the North African coast.

"On my subsequent misfortunes I will not dwell except to say that my machine was badly damaged at Aboukir through some one removing the contact breaker from the impulse starter magneto, which caused her to start up accidentally with the throttle full open, no chocks under the wheels, and no one at the controls—the result can best be imagined.



A few of the flamingoes which Mr. Tuckett saw on Lake Nakuru in Kenya. The photograph was taken at about 300 ft.



A sunset scene at Wadi Halfa. Both this and the photograph at Asiut were taken on the ground with the cinema camera.

"The film contains many fine views of Egypt, both aerial and otherwise, and, besides showing the Imperial Airways flying boats in operation at Alexandria and a Dornier Wal belonging to the Italian Air Line, it gives a vivid impression of the amount of flying done in the East by the Royal Air Force. One of the captions in the film is 'The Watch on the Desert.' This shows formations of 'planes operating near Khartoum. There are many views of tombs and other ancient places of Egypt of the highest archaeological interest.

"The scenes were taken the whole way 'Down the All-Red Air Route' shortly to be opened by Imperial Airways. One of the scenes shows natives in Northern Uganda standing some distance away from me, being terrified of my 'plane. They afterwards got used to it, however, and another picture shows some of the village belles attired only in a string of beads, standing in front of the 'plane.

"A striking scene is an aerial view of vast forest fires raging in Uganda, which at certain times of the year make visibility very poor.

"In Kenya Colony I obtained some aerial views of game, and there is an amusing picture of a large rhinoceros running away as fast as his legs can carry him, whilst my 'plane was only a few feet above him.

"Another fine shot was obtained from the air of the millions of flamingos which live on Nakuru.

"Before leaving East Africa I flew over Mounts Kilimanjaro and Kenya, obtaining remarkably fine pictures in the first aerial films yet taken of the two highest mountains in Africa. I had considerable difficulty in filming the former, as the air was extremely rarified and the machine kept on 'cushioning' as I approached the summit.



Mr. Roy Tuckett is on the left, while alongside him is an official of the Port Elizabeth Club where Mr. Tuckett originally learnt to fly. The Goodyear air wheels which originally went out to Africa for Mr. John Carberry's Moth should be noted.



A view of one of the Nile canals at Asiut at sunset.

# THE ROYAL AERO CLUB OF THE UNITED KINGDOM

## OFFICIAL NOTICES TO MEMBERS

REPORT of meeting of the committee of the Royal Aero Club, held at 3, Clifford Street, W.1., on Wednesday, January 14, 1931, at 5 p.m.

**Present:**—Lieut.-Col. M. O'Gorman, C.B., in the Chair; Griffith Brewer; Lieut.-Col. M. O. Darby, O.B.E.; Major C. J. W. Darwin, D.S.O.; Major A. R. Goodfellow; Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; J. Lord; Lieut.-Col. J. T. C. Moore-Brabazon, M.C.; Major H. A. Petre, D.S.O., M.C.; Air Commodore C. R. Samson, C.M.G., D.S.O. In attendance, H. E. Perrin, Secretary; B. Stevenson, Assistant Secretary.

**Election of Members.**—The following were elected members:—Arthur Percy Bradley, Lieut. Cyril William Byas, R.N., Major Thomas Smith Impey, George Ellis Langdon, Lieut.-Col. Frederick William Lucas, Cecil Giesler Norbury, Squadron-Leader Albert Edward Pettingell, Norman Hargreave Woodhead.

**Aviators' Certificates.**—The following Aviators' Certificates were granted:—

9638	George H. C. Willins ..	Hanworth Club (N.F.S.)
9639	Michel Noel Mavrogordato	London Ae. C.
9640	Charles Hossle ..	Cinque Ports Fl. C.
9641	George Bodley Kingdon	
9642	Herbert Leigh Holman	Hanworth Club (N.F.S.)
9643	Cyril Forman Bowness	Newcastle Ae. C.
9644	Ian Patrick Magrath ..	Hanworth Club (N.F.S.)
9645	Michael Henry McDougall	Scottish Fl. C.
9646	Edmund Cuthbert	Royal Air Force
	Hudleston	
9647	Harold Bailey ..	Lancashire Ae. C.
9648	John William Grover ..	Reading Ae. C.
9649	Theodore Cecil Sanders	Reading Ae. C.
9650	William Molesworth	Reading Ae. C.
	Hodge	
9651	William R. A. Walters	Nottingham Ae. C. (N.F.S.)
9652	Harold R. W. Ellison ..	Leicestershire Ae. C.
9653	Kathleen Muriel Scott	Yorkshire Ae. C. (N.F.S.)
9654	Leslie Aubrey Golding ..	D.W. Fl. School
9655	Amar Nath Agarwal ..	Hanworth Club (N.F.S.)
9656	William Shepherd Allen	
9657	Robert Leon Howard ..	D.W. Fl. School
9658	Norman Rycroft Jackson	Hanworth Club (N.F.S.)
9659	John Nutton Camp ..	Hanworth Club (N.F.S.)
9660	Wilfrid Grover ..	Reading Ae. C.
9661	Desmond L.C. Craig ..	Suffolk & E. Counties Ae. C.
9662	Alexander Collings ..	Lancashire Ae. C.
9663	Frank Louis Neher ..	Airwork Fl. School
9664	John Millar Colville ..	Scottish Fl. C.
9665	Leslie Grey Sykes ..	Airwork Fl. School.
9666	John Ewart Beard ..	Brooklands Fl. School.

**Gliding Certificates.**—The following Gliding Certificates were granted:—

62	Charles A. Le M. Irving ..	London Gl. C.
63	Leslie James Gardner ..	London Gl. C.
64	Dudley G. O. Hiscox ..	London Gl. C.
65	Charles Byron ..	Dorset Gl. C.
66	Horace Charles Wright ..	North Cotswold Gl. C.
67	Douglas Edward Culver ..	London Gl. C.
68	Charles Moberly Barter ..	Surrey Gl. C.
69	Alan Edward Slater ..	Surrey Gl. C.
70	George Herbert Hurst ..	Surrey Gl. C.
71	Rutherford Kerr Thomson	Dorset Gl. C.
72	Charles Elliott ..	London Gl. C.
73	Rex Fabricius Matthews..	London Gl. C.

74	Stanley Percival Woodley	Portsmouth & Southsea Gl. C.
75	Merlin Bruce ..	Portsmouth & Southsea Gl. C.
76	Daniel John Dudley ..	London Gl. C.
77	Alfred Edward Thompson	Scarborough Gl. C.
78	Charles Edward Turner ..	Scarborough Gl. C.
79	Eugene Esmonde ..	Portsmouth & Southsea Gl. C.
80	Katrine Margaret B. Alexander	North Cotswold Gl. C.
81	Geoffrey Dorman ..	London Gl. C.
82	Conway W. H. Pulford ..	London Gl. C.
83	Ebenezer Kenneth Robins	Dean Close School.
84	Cornelius John Donovan..	London Gl. C.
85	Tom Harry England ..	London Gl. C.
86	William Henry Wood ..	Southdown Skysailing C.
87	Reginald Percy Robinson	Scarborough Gl. C.
88	Eric Shepherd ..	Surrey Gl. C.
89	Allan Kell Bindloss ..	Surrey Gl. C.
90	Frank Henry Robertson..	Surrey Gl. C.
91	George Knight ..	Portsmouth & Southsea Gl. C.
92	Fl./Lt. Charles Crawford..	Kent Gl. C.
93	James B. L. H. Cordes ..	London Gl. C.
94	Francis Delaforce Bradbrooke	London Gl. C.
95	Henry Eccarius Bolton ..	London Gl. C.
96	Vernon Richard Yelf ..	Portsmouth & Southsea Gl. C.
97	George John Burges ..	Portsmouth & Southsea Gl. C.
98	Hubert George Lympany	Portsmouth & Southsea Gl. C.
99	Charles Eric Dooks ..	Bridlington Gl. C.
100	Charles Graham Lawson	Southdown Skysailing Cl.
101	Charles Stanley Hollinghurst	Surrey Gl. C.
102	Sidney Horace Bell ..	Surrey Gl. C.

## GENERAL COUNCIL OF ASSOCIATED LIGHT AEROPLANE CLUBS

**Blackpool—International Aviation Meeting.**—The recommendation of the General Council that an International Aviation Meeting should be organised by the Royal Aero Club at Blackpool on July 8–11 was considered and approved, subject to satisfactory arrangements being made with the Blackpool Corporation.

**The Late Air Vice-Marshal Sir Sefton Brancker.**—Unanimous approval was given to the recommendation of the General Council that the Royal Aero Club should commission a well-known artist to execute an oil painting of the late Air Vice-Marshal Sir Sefton Brancker.

**King's Cup Air Race, 1931.**—The approval of His Majesty the King to the Regulations to govern this year's Air Race for the King's Cup was reported.

The Secretary was directed to issue the Regulations (See also separate announcement.)

**Annual General Meeting.**—It was decided to hold the Annual General Meeting of the Club on Wednesday, March 25, 1931, at 8.30 p.m.

Offices: THE ROYAL AERO CLUB,  
3, CLIFFORD STREET, LONDON, W.1.  
H. E. PERRIN, Secretary.

## Imperial Airways and Greek Airports

THE provisional arrangement between the Greek Government and Imperial Airways, under which Imperial Airways is permitted to use Greek air-ports, was renewed on January 14, for a further three months from December 31 last, until March 31, on the understanding that a representative of the company will visit Athens before March 31 to negotiate a definite air agreement.

## Maj. R. H. Mayo's New Address

MAJ. R. H. MAYO informs us that he has changed his office address from 15, New Square, Lincoln's Inn, to 39, St. James's Street, S.W.1 (Telephone, Regent 5485). There is, he points out, no change in regard to his appointment as consulting engineer to Imperial Airways, and he will carry on the whole of his consulting work as before, the new offices being more conveniently situated than the old ones.

# TRACK ASSEMBLY OF AIRCRAFT

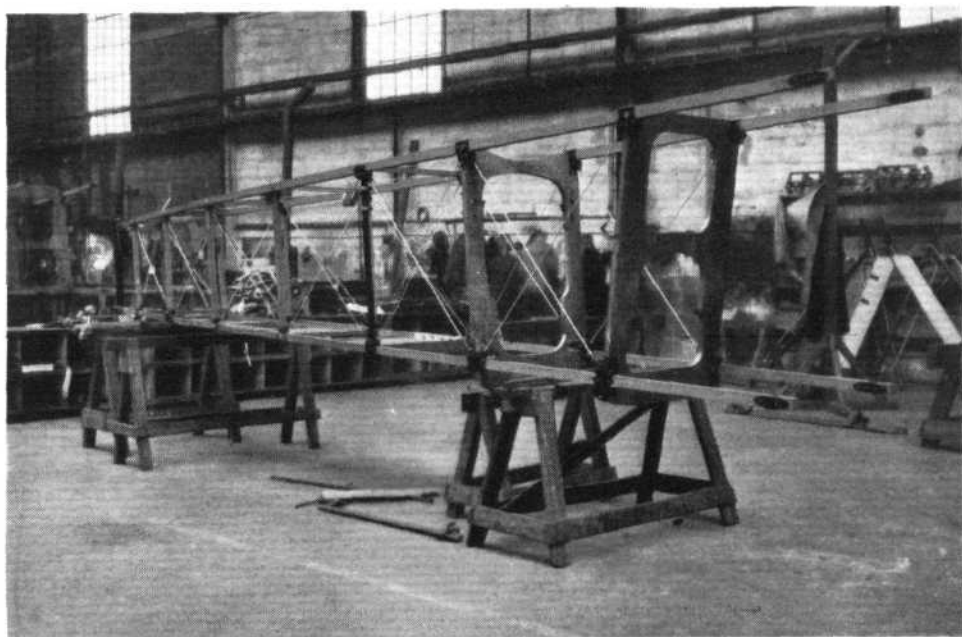
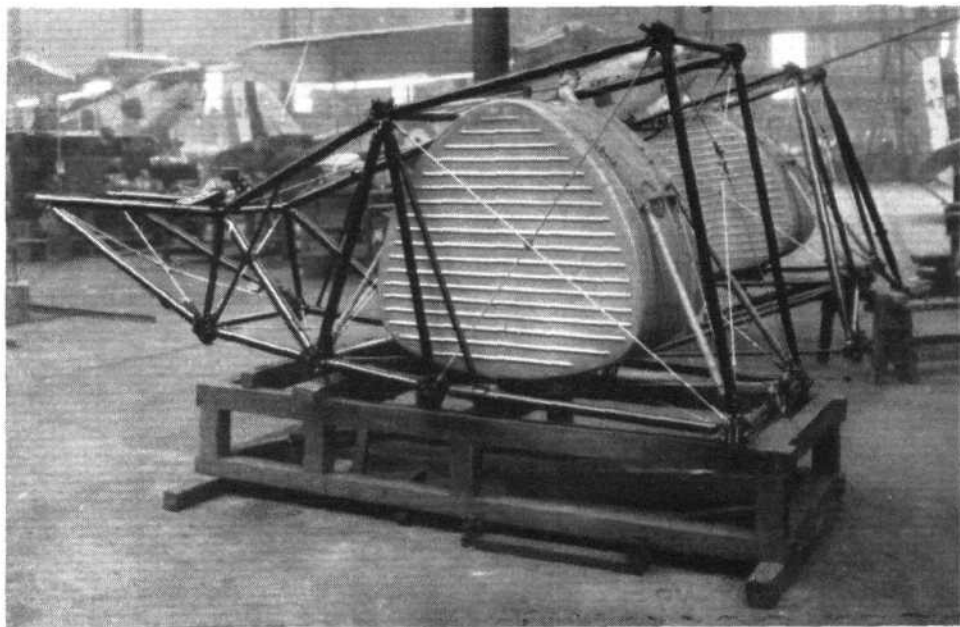
## Blackburn's Latest Time-Saving System

As a result of careful investigation into production methods, the Blackburn Aeroplane & Motor Co. have adopted the track system of assembly in their factory at Brough, East Yorks, and are probably the first aircraft constructors in this country to do so since the war. Briefly, the system consists of mounting the bare skeleton fuselage, consisting of a jig-built steel tube centre structure and wooden rear fuselage, on a trolley which is placed on a pair of rails running the greater part of the length of the main erection shop. The assembly programme is divided up into a number of stages which are represented on the track line, and as each stage is completed, each fuselage moves along the track to the next, and so on, until at the end of the track the machine is complete except for main planes, chassis, and final adjustments. They then progress down another line on their own chassis without a track and finish up complete at the erection shop doors ready for test and delivery.

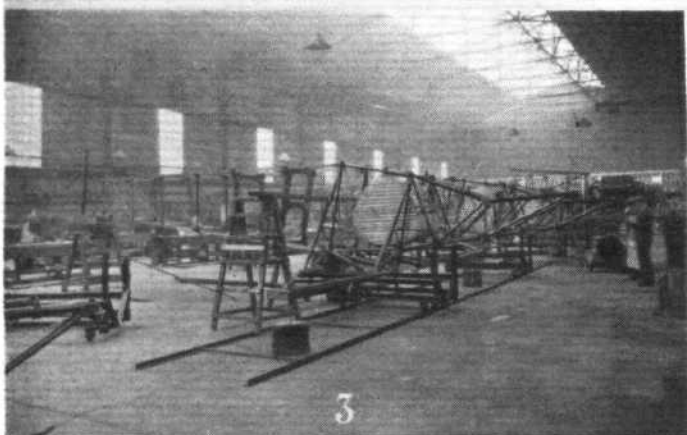
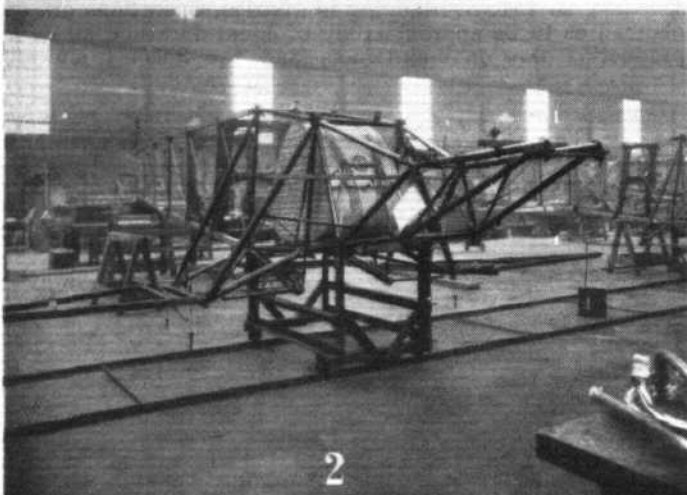
The layout of the system in the big main erection shop was started in March, 1930, and the first experimental track was put down in April. In July, the track was extended to meet greater production requirements, the floor space was marked out by means of white lines, and quantity production has been continued most successfully by this method ever since. It has been found to make a substantial difference to the cost of production and an enormous saving of time, as compared with other methods, as well as regulating the work in the factory in so orderly a fashion that congestion is avoided and adequate space is ensured for each operation and for the works departments, which are situated in close proximity to the assembly lines. At the present moment, an Air Ministry contract for a quantity of Ripon torpedo 'planes is being handled on this system, and the required delivery is being kept punctually with only one track line in operation; if required, the rate of delivery could easily be increased considerably, either by extending the track still further and increasing the number of operations, or by laying down additional lines.

The track system adopted for aircraft production by the Blackburn Co., at the instigation of their works manager, Mr. W. P. Meeson, whose wide experience of production methods has been gained by association with such well-known motor firms as Humber and Hillman in England, and Buick and Packard in America, is very similar to the early system used for mass production of motor cars, and in fact resembles present-day car assembly methods, except that the trolleys are not mechanically propelled from stage to stage. In the case of the "Ripon II," which as is well known, has a steel tube centre structure and wooden rear fuselage—jig-built, like all other units—the centre structure is mounted on a metal trolley on a pair of rails which constitute the track and so enters the first stage of track assembly. The trolley incidentally maintains the fuselage approximately in flying position, and at a convenient height above the floor for all work to be as accessible as possible.

The first stage consists of attaching the wooden rear fuselage by its four joints to the steel centre structure, and involves fitting jig extensions to the bottom centre planes, so that measurements may be taken on each side to the sternpost to ensure the alignment of the complete structure. At this stage also, the engine, fireproof bulkhead and rear fuselage fairings are fitted. This completes the first stage, and necessitates a move along the track to the next stage, and so on, as each stage is completed. In all, the track assembly of the Ripons is divided into eight stages, and all the components for each stage are grouped on benches opposite each station, so as to ensure that no time is lost, and that each stage is fully completed before moving on to the next. Each stage is, moreover, governed by a time schedule, so that overlapping is avoided, operations are so planned as to be approximately of equal duration, an even production flow is maintained, and the finished aircraft



**TRACK ASSEMBLY OF AIRCRAFT:** These two photographs show the main sections of a Blackburn "Ripon." Above the central steel tube fuselage structure with petrol tank in place, and below the wooden rear portion of the fuselage. It is chiefly to the "Ripon" that the system of track assembly has been applied at Brough.



**TRACK ASSEMBLY OF AIRCRAFT AT BROUGH:** (1) First stage, a "Ripon" fuselage on the track. (2) The next stage, the rear portion of the fuselage added. (3) Beginning of track, and "Ripons" in early stages of assembly. (4) "Ripons" nearing end of track; note overhead derrick. (5) "Ripons" nearing completion on the end of the track. (6) The final stages. In the foreground a "Ripon" ready for test flights.

follow each other regularly in accordance with delivery requirements. On the single track at present in use at Brough, the greatest number of Ripon machines which are accommodated at once is the same as the number of assembly stages, that is to say eight, but if greater production were required, the number of stages and number of machines on the track could be increased, or additional lines could easily be put down.

At the end of the track, the nearly completed machine is lifted from its trolley by a derrick, the chassis is fitted, and it then takes its place in another line (without a track)

and proceeds in the opposite direction, undergoing the final stages of main plane assembly and rigging, connection and rigging of controls, fitting of armament and equipment, after which it proceeds to the dope shop to be finished off.

Finally, each machine arrives fully completed at the main door of the erection shop, ready for final inspection, engine test, flight test, and delivery. Inspection by the firm's inspectors and the A.I.D. is of course carried out at all stages of assembly, and the same high standard of workmanship is maintained as by any other method.

#### The Late Air Vice-Marshal Sir Sefton Brancker

THE Royal Aero Club and Associated Light Aeroplane Clubs have decided that an oil painting of the late Sir Sefton Brancker, by a well-known artist, should be hung in the Club, as a memorial to one who had done so much for British Civil Aviation, and who had so actively associated himself with all the Light Aeroplane Clubs. A large number of members of the

Royal Aero Club will no doubt wish to support this proposal by contributing towards the cost, and donations should be sent direct to the Club. Each of the Associated Light Aeroplane Clubs has undertaken to collect donations from its members. It is hoped that sufficient funds will be available for a reproduction of the oil painting to be hung in each of the Associated Light Aeroplane Clubs.

## POWER SUPPLY FOR AIRCRAFT RADIO EQUIPMENT

### The M-L Emergency Hand-Driven Generator, Rotary Transformer, and Air-Driven Generator

ONE of the pioneer firms in the manufacture of small generators and rotary transformers for radio purposes is the M-L Magneto-Synd., Ltd. Since the early days of broadcasting, they have been manufacturing such machines for H.T. and L.T. supply, amongst their products being the well-known "Anode Converter," a small machine taking current from an L.T. accumulator, and giving anode current for plate supply of a radio receiver. Many different types of machines for all purposes are now available.

The M-L Co., have paid particular attention to the design of suitable radio power units for aircraft work, and have developed machines both for general and emergency use. Many of these machines are now used by the R.A.F., proving that they can be relied upon to give satisfactory service.

**The M-L Emergency Hand-Driven Generator.**—It is now generally agreed that all aircraft engaged on long journeys should carry, in addition to their normal transmitting generator, an emergency generator, which can be utilised when a forced landing is made and when, therefore, the air-driven machine is out of action.

A hand-driven generator provides that solution, and by the turning of the handle, H.T. current for valve anodes and L.T. current for valve filaments is obtained. The M-L hand-driven generator, type "C" (which is illustrated in Fig. 1), is designed to give outputs of 800 volts 30 milliamps. and 6 volts 2.6 amperes when the handle is turned at 90 r.p.m.

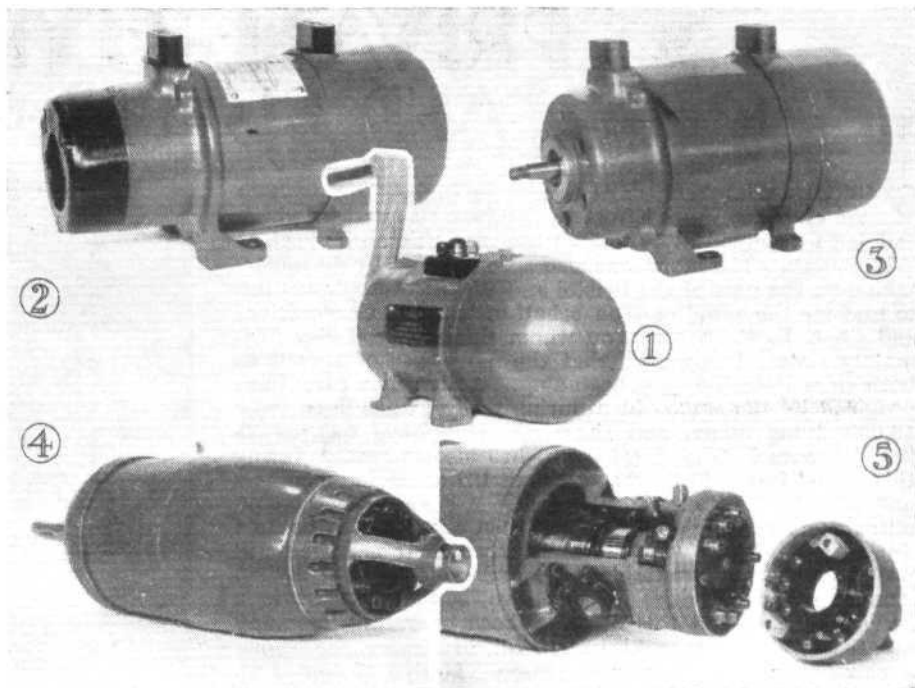
The machine consists of a double-wound armature which runs in a permanent magnetic field of cobalt steel. An improved construction is the location of both commutators at the same end of the armature. This enables the inspection of the commutators and brush gear to be carried out by the removal of one end cover only.

The type "C" generator is fitted with interrupter gear for I.C.W. transmission, this being put into circuit by means of the switch which can be seen on top of the machine.

The generator is of extremely compact design and weighs only 16 lb. Great care has been taken to reduce the ripple across the terminals to a minimum, and to ensure that the machines are as mechanically silent as possible.

**The M-L Rotary Transformer.**—Rotary transformers are manufactured which take current from an L.T. accumulator, or any direct-current source, and which give H.T. outputs for radio transmitting purposes.

The type "G" rotary transformer has been specially



SOME M-L RADIO EQUIPMENT FOR AIRCRAFT: 1, the hand-driven generator, type C. 2, the type G 80-Watt Rotary Transformer with interrupter. 3, the type G 80-Watt Rotary Transformer without interrupter. 4, air-driven generator. 5, same partly dismantled to show parts.

designed for aircraft work, and the weight has been reduced to the very low figure of 9 lb. This machine operates from a 12-volt accumulator and gives an H.T. output of 1,100 volts 80 watts. The efficiency of this model is about 60 per cent., a remarkably high figure for such a small machine. To obtain such an efficiency, field windings are, of course, dispensed with, and a cast cobalt magnet is employed.

The illustrations (Figs. 2 and 3) show the above-mentioned machine with and without interrupter for I.C.W. transmission. This machine has been standardised by the Air Ministry.

**The M-L Air-driven Generator.**—For general aircraft transmitting purposes the M-L Co. have just developed an air-driven generator which will provide H.T. and L.T. current to the extent of 160 watts when driven at a speed of 3,500 r.p.m. This model, which is illustrated on Fig. 4, shows a considerable improvement on any air-driven generators made in the past, and an important point is that the weight is only 16 lb., an extremely low figure. The machine is, of course, driven by a constant-speed windmill, and the construction already mentioned of fitting both commutators at one end of the armature is again followed, these being at the remote end from the propeller spindle.

Two discs for I.C.W. transmission are fitted, and the leads to these and to the brushes are brought out to a seven-point socket. A special seven-point plug connected with the transmitter by a multi-cored cable, fits this socket.

**Motor-generator Sets** for the aerodrome are also included among the models manufactured by the M-L Co.

An extremely interesting booklet, "The Book of the M-L Rotary Transformer," can be obtained by anyone interested upon application to Smith's Aircraft Instruments, 185, Great Portland Street, London, W.1, who are responsible for the distribution of all M-L aero products.

#### Oxford University Air Squadron

It was announced some time ago in FLIGHT that Wing Commander A. G. R. Garrod, M.C., D.F.C., was about to complete his term of command of the Oxford University Air Squadron. It is now announced that he will be succeeded by Wing Commander Roderic M. Hill, M.C., A.F.C., p.s.a., F.R.Ae.S., Fellow of University College, London, who is well known as the author of that most enjoyable book, "The Baghdad Air Mail."

#### Saunders-Roe Activities

THE Directors of Saunders-Roe, Limited, announce that Whitehall Securities Corporation, Limited, has recently acquired a substantial holding in their Company. Saunders-Roe, Limited, are manufacturers of flying-boats, amphibious

aircraft, motor-boats and ply-wood, and possess extensive works and water frontage at Cowes, Isle of Wight. Their range of aircraft includes Service flying-boats, and a series of multi-engined civil flying-boats, known as "Cutty Sark," "Windhover," and "Flying Cloud," all of which can be constructed as amphibians. Whitehall Securities Corporation, Limited, is already a large shareholder in Spartan Aircraft, Limited, of Southampton, and arising out of its new interest in Saunders-Roe, Limited, close working arrangements will exist in future between these two aircraft manufacturing concerns. Spartan Aircraft, Limited, as heretofore, will continue to produce its two and three-seater light aeroplanes and the development of certain new types of land aircraft.



# PRIVATE FLYING AND CLUB NEWS



**BRISTOL AND WESSEX Aeroplane Club.**—During 1930 the club was moved from the temporary quarters which had been occupied at Filton, to the new Bristol air port at Whitchurch. The move was also accompanied by an undertaking on the part of the Bristol and Wessex Aeroplane Club to manage the aerodrome on behalf of the City Corporation, and Capt. L. P. Winters, on whom this responsibility ultimately rested, has proved that the move was of benefit to both sides from the very beginning. Active flying has been provided by the club, which during the year has done some 16,000 flying hours, and these members have secured 25 "A" licences. The membership has also increased during this period from 243 to 427, of whom 187 are flying members and 85 hold "A" or "B" licences. A series of lectures on all subjects relating to flying has been organised to be held during the coming winter evenings, which it is hoped will prove almost as profitable to members as actual flying. Among other activities which have been organised is a service station, and this has now been operating for many months as a branch of Airwork, Ltd., of Heston, for whom, a new hangar is now in construction. Merlyn Motors, Ltd. have occupied one of the showrooms on the air port since May last, and are doing good work in the sales and distribution of aircraft. When it was first suggested that the club should undertake the management of the aerodrome, there was a large number of people who seemed to think that this would be an unwise step. Results have, however, dispelled their doubts, and we feel assured that 1931 will show an even greater advance for both the club and the aerodrome. There remains one more service which it is hoped to institute during the early summer, and this is an air-taxi service. There has already been a steady demand for machines for taxi work, but in the majority of cases club aircraft have been unable to cope with this demand, since their primary vocation is training-flying, and quite rightly too, but negotiations are already in progress, and shortly we hope to see the taxi service in being.

**A NEW D.H. Publication.**—The *Illustrated Moth Gazette* is a new publication issued by the De Havilland Aircraft Co. This is now replacing the old *D. H. Gazette*, and both pictorially and in text gives its readers a comprehensive and up-to-date survey of De Havilland activities, and, in fact, all the news "lepidopteral" there is to be obtained at the moment. No. 1, vol. i, for January this year, consists of eight pages profusely illustrated with the various types of aircraft and engines which come out of the D.H. factory and shows them in world-wide use.

**LONDON Aeroplane Club.**—Members are reminded that the annual dinner and dance will take place at the Park Lane Hotel, Piccadilly, on Tuesday, February 17, 1931.

Tickets, single 18s. 6d. and double 32s. 6d., can be obtained at Stag Lane Aerodrome, Edgware, or 3, Clifford Street, London, W.1.

It is hoped during the evening to make the draw for the club raffle of three aeroplanes. There are still a few tickets available at 10s. each.

## The Growth of Heston

AIRWORK, LTD., which, as everyone in aviation must by now be aware, was started by Messrs. Norman & Muntz, have just produced an interesting brochure describing their growth from the date of starting in April, 1929, up to the present day. It is made up of a series of articles which have previously been produced in various papers and is illustrated with half-tone blocks of various phases of the construction and operation of the place. No one who is interested in the establishment of a private or municipal airport can afford to miss the opportunity afforded them in this brochure to increase their own knowledge and profit through that gained by Messrs. Norman & Muntz during the construction of Heston. At the present time, barely two years from the very start, it is undoubtedly one of the most popular aerodromes in the country for both commercial and private users, and an increasingly large number of special charter machines and private owners who are flying to the Continent find it prefer-



**RUNNING ON AIR:** A pair of Goodyear 22×10-4 Air-Wheels fitted to Avro "Avian" G-AACV owned by Airwork, Ltd., of Heston.

## Ground Instruction to Members

The scheme for ground instruction to members has been taken up very keenly, and the lists for the one month's daily class and three months' course have both been completed.

**HANWORTH CLUB Special Meeting.**—A special meeting of members of the Hanworth Club will be held at the Club on Sunday, February 1, at 5.30 p.m.

The principal business of the meeting will be to consider and, if thought fit, adopt and act upon the following resolution:—"That the interests of the members of this club, and of British private flying, require this club to be outstandingly attractive and successful, and that the most effective way to make it so is to launch immediately an energetic campaign for increased membership."

Should the above resolution be carried, it is proposed to enlist the active support of all members for a campaign for increased membership.

The matter is of the greatest possible importance to members, and the committee therefore request them to make a very special effort to be present at the meeting.

The committee have arranged for monthly landing competitions to be held, which will be open to all licensed pilot members of the club. The competition will be decided by measured distances from a landing mark on three consecutive landings, and cards (2s. 6d.) may be taken out any day and at any time during flying hours throughout the month.

The competition will be open on February 1, and any number of attempts may be made during the month.

The monthly prize will be a silver spoon, and a cup will be awarded on the aggregate results taken over a half-year period, the first of which will be February-July.

Full particulars may be obtained at the Training Section Office.

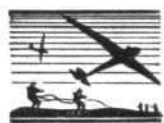
able and much more agreeable to clear customs at Heston where they are welcomed and looked after in every way instead of doing so at Croydon, where they are very definitely not welcomed. All readers who wish for a copy of this publication can obtain it from Airwork, Ltd., Heston on mention of FLIGHT.

## The Late Dr. Whitehead Reid

DR. WHITEHEAD REID, of St. George's House, Canterbury, who, together with Miss Irene Burnside, was fatally injured in an aeroplane accident near Maidstone, in October, left £12,136.

## Slots on Training Aircraft

It has been announced that, in future, slots are not to be locked on aircraft used for training purposes. It is agreed that pilots need training in handling machines to which slots have not been fitted, but it is also now agreed that pupils should be deprived of nothing which makes for safety in the earlier stages of learning to fly.



# GLIDING



**THE LONDON Gliding Club.**—Sunday was a bitterly cold day on the Downs above Totternhoe, but the wind was fairly strong and in the right direction to make soaring conditions admirable. It had been so for the whole of the previous day and it was therefore not surprising to hear on our arrival that Mr. F. Buxton had broken the British duration record on Saturday with a flight of some 2½ hours. On Sunday, Mr. C. H. Latimer Needham who had, previous to Mr. Buxton's flight, held the record went up and down a short strip of the Downs until he had completed close on three hours' flying. He has presumably therefore unofficially regained his previous record. Quite what good such records do is a little difficult to see, and we feel that they must be classed with the existing craze in America for both male and female pilots to remain aloft in an aircraft until such time as it drops to pieces. Once a pilot is expert enough to sit on top of a series of uprising currents as were available during the weekend at Totternhoe there can surely be very little merit in continuing to do so for as long as the wind holds. Cross-country flights and investigation of the currents over new ground would, we feel, constitute a much more profitable line of action and we hope shortly to hear of both these pilots emulating Herr Kronfeld and flying, say, from Dover to Salisbury. Of course, these long flights were rather more meritorious than might at first be imagined, since they were made on a Prüfling, and not a really efficient type of glider, but several of the more efficient type of machines are now being built over here, and no doubt before long we shall hear more about them. One of the first of this new class is the "Scud" which as we mentioned last week has been designed by Mr. Baynes, and made by the Brant Aircraft Co. of Croydon. This was tried out for the first time on the same ground the previous week. It was out again on Sunday and Mr. Marcus Manton made several test flights on it. Aerodynamically it is undoubtedly a very interesting little machine designed on entirely different lines to anything we have yet heard of, either here or in Germany. With a loading of 3.1 lb. per sq. ft., it is some 50 per cent. higher than machines like the "Wien," but the amazing part about it is that the total structural weight has been kept down to 103 lb. It is in the form of a braced parasol monoplane with a diamond shape fuselage.

The tail surfaces, that is, both elevators and rudder, are cantilever from the fuselage and naturally balanced by virtue of their rotation about a single spar. The value of such a machine as the Scud will undoubtedly lie to a large extent upon its handiness, two hand holes are provided on each side of the fuselage and it is found that four men can quite easily pick it up and carry it about. We understand

that the preliminary modifications have taken the form of gearing down both the elevators and rudder, which has had the desirable effect of making the controls a little less sensitive. Previously, owing to the shortness of the fuselage the machine was rather too touchy for any other than the most expert pilot to fly. During the afternoon several club members made excellent flights on both the Prüfling and the club Zöglings. On the latter at least two flights of nearly 3 min. duration were seen. We still, however, cannot quite see the necessity for such flights being made in an inefficient machine of this type and would have thought that its use should have been confined to very short hops from low down the gliding slope in order to familiarise pupils with the use of the controls. To shoot them off the top of such a high hill as there is at Totternhoe must inevitably result, as it did on Sunday, in crashes.

Satisfactory and great progress has been made in the club during the last few months and, in spite of the shortened time of daylight available for gliding during the week-ends, the number of flights per day has been maintained within measurable distance of that obtained during September and October. The Dagnall prize, which has been put up for the club obtaining the greatest number of "A" certificates, is causing considerable interest, and the club's score of 17 will, it is hoped, give them a good chance of winning. Six members have completed the qualifying flights for their "B" licences and are now waiting a chance to do the final tests. Five of these were trained *ab initio* by the club. As readers of FLIGHT will know, the three lectures organised by the club have been particularly interesting and well attended, and there is no doubt that members have found a great deal of benefit from these lectures. The advanced group, the formation of which was announced last week, has proved to be a great success, and the mechanical method of returning a machine to the starting point has enabled an increased number of long flights to be made. There is now a considerable number of vacancies in the Instructional Groups for those people who either have or have not had previous aviation experience, and anyone in the London district who is interested is advised to write to the Hon. Secretary, London Gliding Club, Empire House, St. Martin's le Grand, E.C.1. (National 8682).

**SOUTHDOWN Skysailing Club.**—On Sunday, January 11, this club carried out their usual programme of flying in spite of the fact that their club captain, Flight-Lieut. Brown had broken his leg the previous week. Several good glides were made and more and more members are increasing their knowledge of the sport.



A three-quarter front view of Brant Aircraft Co's. "Scud." (FLIGHT Photo.)



Capt. Latimer-Needham reflecting in solitude and silence over the downs at Totternhoe. (FLIGHT Photo.)

On January 19, the club put in a full day's work, all members who turned up in good time getting three launches each.

In the absence of Flt.-Lt. Brown, who, we are glad to say, is making satisfactory progress after his accident, Mr. C. C. Russell made a test flight of 31 sec. Mr. Robins followed, with an attempt at a 45 sec., but failed owing to a bad choice of launching position. The wind, which had been strong, now dropped, and short flights from lower down the hill were carried out.

Miss Hackworth continued to show great promise, and the advantage of a light hand on the elevator control.

Messrs. Tulley and Cannon should be ready for their "A" certificates at an early date, and Messrs. S. Robinson and Leaney show marked improvement. The use of a greased launching board has been temporarily discontinued, as several members agree that the acceleration obtained with a good rope is too rapid to be comfortable. With an old rope this board was a very great advantage.

The day's work was reduced by the arrival of an ancient Chevrolet car with double wheels and chains, but it did not share the high spirits of its drivers, and so packed up during the afternoon, needing the combined efforts of all members to remove it from the field.

**THE SOUTHAMPTON** Gliding Club has now taken delivery of its first machine, a Dickson primary training glider. Conditions were not too favourable when the first tests were held on Saturday, January 10, at the club's flying ground near Red Lodge Farm, Bassett, Southampton. The club's instructors were, however, able to make several satisfactory flights and were unanimous in their opinion that it was the best machine of its type they had ever flown. The next meeting will take place on Sunday, January 18, at 3 p.m. at Wide Lane, Swaythling, after which regular instruction will be given every week-end at Red Lodge Farm. Those who are interested in the club and wish for further information should apply to the Hon. Secretary, 18, Cumberland Place, Southampton.

**GLIDING in New Zealand.**—A gliding club has been formed at Dannevirke, Hawkes Bay, New Zealand. Mr. I. L. Knight has accepted the presidency and Mr. E. R. Perkins is the secretary. At a recent meeting in November, after the election of all the other officers, it was proposed to start work

on the club's first glider and since many of the members were trained in the R.A.F., this should be ready by now. Another club which has been formed is the Palmerston North club, so that it would seem that the wave of gliding enthusiasm which was recently started in England has now reached all our Dominions. Those who are interested in the former club should apply to the honorary secretary, 6, Barraud Street, Dannevirke, Hawkes Bay, New Zealand.

**STOCKPORT** Gliding Club have made a working agreement with the Manchester Aeronautical Society for the joint use of the latter's training glider. This should be of mutual advantage to both, since the Stockport Club can supply an abundance of keen members for the launching team while the Manchester Society has among its members many who are connected with the aircraft trade and are therefore particularly valuable in the design and constructional section. Mr. B. A. Meads, a flying member of the Lancashire Aero Club, has consented to act as honorary instructor for the Stockport club so that there is every hope of some good gliding and valuable experience being obtained with the help of so many keen and talented members. Gliding has up to the present been done on the Woodford Aerodrome of A. V. Roe & Co., Ltd., but it is hoped that a more suitable site on a hillside will be discovered before long.

**THE LEEDS** Gliding Club have found that they cannot cope with any increased flying membership and have therefore had to close their lists. Associate members, however, may still be enrolled and will have the opportunity of changing over to flying membership when that list is re-opened. Their existing site has been found to be too dangerous for ordinary work and they have therefore joined forces with Harrogate and are for the present using the same site.

**THE SAIL-PLANE CLUB.**—The Sail-Plane Club and the Model Aircraft Club are holding a joint dance at the Suffolk Galleries on Saturday, March 7, for the purpose of assisting in funds for the development schemes both clubs have in view.

Those interested in gliding and experimental aeronautics are cordially invited to come and meet fellow enthusiasts. Dance tickets, 2s. 6d. each. Refreshments at moderate prices. Apply, Hon. Secretary, The Sail-Plane Club, 2, Wine Office Court, Fleet Street, London, E.C.4.

# AIR TRANSPORT

## SERVING THE NEW GUINEA GOLDFIELDS

THERE is no other air service in the world of such vital necessity to the districts served, or one which transports freight daily in such huge quantities."

This opinion has been expressed by authorities who have studied the work of the air lines which serve the goldfields in New Guinea, and the facts to hand show that the praise is well deserved.

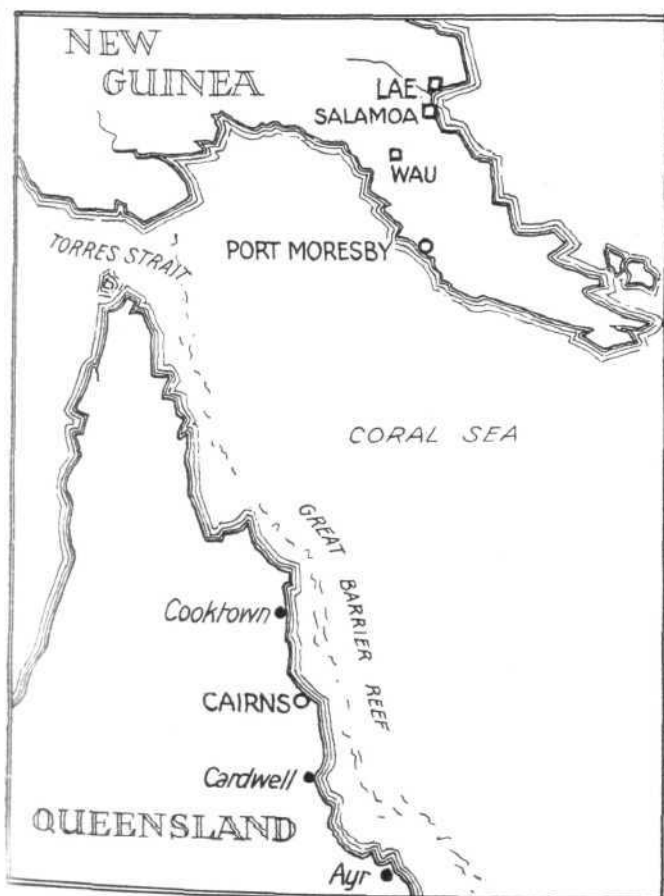
The gold mines, of which the foremost is worked by the mining company known as Guinea Gold (No Liability), are situated near Edie Creek in New Guinea. The only seaport which can serve the goldfields is at Salamoa, 70 miles away. The position is made clear by the maps which accompany this article. The track which connects Salamoa and Edie Creek is a very rough track. It goes through dense tropical jungle, climbs up and down precipitous ravines, and crosses swamps and rivers. Sometimes there are primitive bamboo bridges across the rivers, but sometimes the porters have to wade.

The fields are in constant need of supplies, both food and other necessities for the miners, and machinery and plant for the works. Four years ago these goods had to be brought up from the coast on the heads of native porters. The Government laid it down that the legal load for a porter must not exceed 50 lb. including his own rations. The return journey took 14 days, for the march from the port to the fields with the loads took eight days, and the return took six days. So the rations for the double trip weighed 20 lb., leaving 30 lb. of goods for the miners. But this 30 lb. did not always arrive intact. Pilfering accounted for a certain amount. Damage by water further reduced the amount, for sometimes the stuff would be spoilt by rain and sometimes loads would be dropped into rivers or swamps, to the detriment of perishable goods. Sometimes loads were lost entirely. One might have expected danger from the very wild inhabitants of the New Guinea forests, who cannot have long abandoned their cannibal habits, but cases of

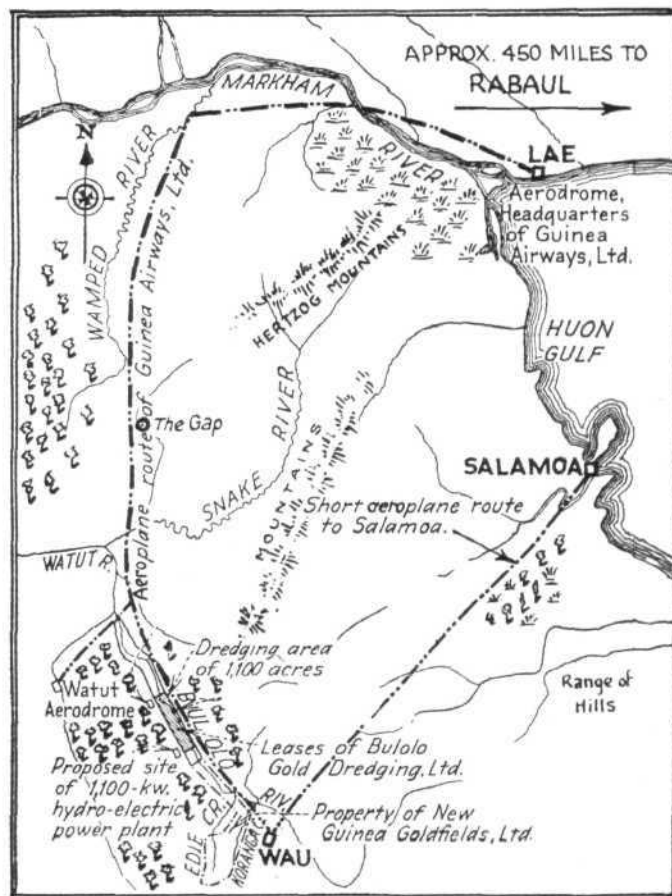
dacoity are not reported to have been common. Probably the whole district was interested in the business, on account of the money earned by the porters, and did not want to kill the goose which laid the golden egg. But when everything had been taken into consideration, it was reckoned that the average cost of a pound of goods transported to the fields was 1s. 6d. To this should be added the inconvenience of the slow transport, which must have represented a certain sum of money, though the amount is not easy to compute.

The position was one of those which sometimes occur—and they are now occurring with ever-increasing frequency—when aircraft appear like the good fairies in the pantomime, or the *deus ex machina* in ancient Athenian dramas, and solve a problem which had begun to seem insoluble. By the end of 1926 the regular airways in Australia had impressed the public with the potentialities of aircraft for providing communications where and when it was not possible to provide railways or motor roads between two places. The Guinea Gold company determined to try aircraft. They acquired a D.H.37 with "Puma" engine and engaged an Australian pilot named Mustard to inaugurate the service. This aeroplane had a pay-load of about 600 lb.

Of course, aerodromes had to be laid out. At first there was no aerodrome at Salamoa, and apparently it was not thought practicable to make one there. So a site was chosen at Lae, on the other side of the bay, 18 miles away from the landing beach. The goods had to be taken from the steamer by lighter across to the aerodrome, and there they were loaded into the aeroplane. At the goldfield end of the route a landing ground was prepared at Wau. It was one of the most extraordinary aerodromes in the world. The altitude was 3,700 ft. above sea level. The landing area was small, and the slope of the ground was about 1 in 4. It was, however, almost always sheltered from the wind, and the machine could land up-hill and take off down-hill. After



Map of parts of New Guinea and Queensland. An air service from Cairns to the island is under consideration.



Map of the goldfields of New Guinea, with the port of Salamoa and the aerodromes.

landing there was always a risk of the machine running backwards down the hill. But Mustard soon learnt all the tricks of the place and was able to make his landings without damage.

The first flight was made on March 18, 1927, and for six months the D.H. 37 made three trips daily. The distance, 62 miles, was little enough to an aeroplane, and the charge of 1s. per lb. seemed to the mining fraternity quite ridiculously cheap. It has since been reduced, and now the charge is about 7½d. per lb.

Before long the Guinea Gold company formed a branch company known as Guinea Airways, Ltd., to manage its air transport. Although the flying was none too easy, the regularity of the service was about 90 per cent. Rain and cloud were not infrequently encountered among the mountains, and they would force the aeroplane up to 11,000 ft. so as to clear the tops of the mountains. In fine weather it was possible to fly through a pass or gap of not more than 3,500 ft. above sea level, which is shown on the map. If an engine failed, there was no chance of getting down without damage to the machine. The D.H.37 had one such experience, but got down without much damage. A D.H.9.C which was acquired later was less fortunate, and was written off in a forced landing. Another firm brought a three-engined Handley-Page to New Guinea (if we remember right, it was a Hamilton with one "Eagle" and two "Pumas"), and this also was written off. Fortunately, in none of these crashes was there any damage to the flying personnel.

The convenience and profit of the air service was speedily recognised. But it soon became obvious that both would be increased if a type of aeroplane were used which would carry a greater pay load. Guinea Airways looked about them, and decided to buy a Junkers W34 low-wing monoplane with Jupiter 6 (direct drive) engine. It was regrettable that they

should have chosen a foreign aeroplane, but the engine was British, and the Jupiter did right good service. We should rather say the Jupiters, for three other monoplanes of the same type were afterwards added to the fleet, and for local fly-about some four Moths were kept. The Junkers W34 has a pay-load of 2,300 lb. with a cruising speed of 100 m.p.h. and its construction makes it possible to load small heavy-weights on the floor of the fuselage without special fixings. With four of these machines in commission, it was found possible to carry as much as 20 tons of freight in a day. Usually the aeroplanes return empty from the field to the coast, but often native workers are carried down at a nominal fee; and up to 14 men have been taken on one trip.

The cargoes carried consisted of tinned foods of all sorts, and of hardware such as sluicing plant, picks, shovels, crow-bars, 10 in. to 4 in. steel piping, centrifugal pumps, petrol engines, a complete wireless station, dynamoes, motors, gas engines, sheet galvanised iron for tanks and buildings, wire ropes, chains, etc.

The isolation of the island makes it necessary for the flying company to be self-contained. Guinea Airways have erected workshops at their base, and always keep 100 per cent. spare engines. A special passenger air service was started last year from Salamoa through Lae to Wau, so as to avoid the rough water crossing of 18 miles.

The success of Guinea Airways naturally induced other firms to start air services in connection with other mining concerns. At one time there were four other flying concerns, of which one, the Morlae Air Lines, was run by R. Parer, the pilot who flew with MacIntosh from England to Australia in 1919 in a D.H.9. This company had its base at Port Moresby, and flew to Wau via Lae. This was the longest air line in the island of New Guinea. The Ellyou Goldfields Development Corporation, the firm which introduced the Handley



**AERIAL ACTIVITY IN NEW GUINEA:** Some views of one of the Junkers machines, fitted with a Bristol "Jupiter" engine, used by the New Guinea Gold Co.

Page, prepared an aerodrome at Salamoia about a year ago. These companies all maintained their air services with excellent regularity, but a reorganisation of the mining industry resulted in some of them gradually withdrawing from New Guinea, and leaving the air to Guinea Airways.

This last-named company secured contracts with the Bulolo Gold Dredging Ltd., and with the Ellyou Goldfields Development Corporation. The contract with the latter provided for the carriage of 800 tons per annum. The Bulolo company gave a contract to convey 4,000 tons of hydro-electric power plant and dredging machinery, including single castings of three tons each. This is to be carried out in the current year.

## CROYDON WEEKLY NOTES

**A**FTER a week of fogbound weather, as reported in the previous issue, Croydon was once more visible as an aerodrome, and a full week of flying was completed, although on the Monday, fog crept up again for a few hours, but did not affect the services in any way, and all companies flew to schedule. After seeing a maximum distance of about 300 yards for a week, it was quite a welcome sight to see the surrounding country again. The improved weather conditions had the effect of bucking up our jarred tempers—that was exactly the weather we had been hoping for.

Private owners are again becoming a source of great annoyance to the authorities, who always do their utmost to help them.

Private pilots ignore many of the rules made for their safety, and cause endless trouble, particularly when flying on the recognised air routes. This particular week in question, a K.L.M. pilot, incoming from Amsterdam, was passing Ostend when a private machine missed him by only a few feet, in bad weather conditions. This sort of thing is not good enough, and although one does not wish to be a pessimist, it is easy to forecast what will happen one of these days. There is a recognised right and left rule on the air routes, and if a private pilot is so incompetent in bad weather, he should be debarred from flying, as he is a public danger, firstly to others, and lastly to himself (report him to Sandy McTavish—Ed.). This is by no means the first time catastrophies have been averted by a very small margin. I understand that a pilot of Imperial Airways had a similar experience quite recently, near Abbeville.

The K.L.M. people are daily bringing loads of flowers, every available space on their machines is used for this purpose. Tulips picked in Holland in the morning are on the tables of many leading London hotels the same evening.

Lt.-Comm. Glen Kidston, R.N., has acquired his six-seater, "Lockheed Vega," which is now being assembled at Croydon. His marvellous escape from the Luft Hansa disaster of 1929 has not deterred him, which is, of course, the right spirit. Glen Kidston, as he is popularly known among his many friends, has long since been among our foremost private owners. It will be remembered that he purchased the late Capt. Lowenstein's three "Lynx" engine Fokker three years ago. The "Lockheed Vega," it is said, cruises at 150 m.p.h., and has a top speed of 180 m.p.h. I understand he is bound for Cape Town and proposes to leave in about a fortnight's time.

On Wednesday, what might have been a very nasty accident luckily turned out to be a minor one. A D.H. Moth, owned by National Flying Services, and piloted by a very young lady, was having the preliminary "sucking in" process before departure, when the engine fired, and the airscrew caught the man who was swinging it. His thigh, hand and arm were severely bruised, and he will undoubtedly have to take a week or two's enforced rest. It was proved that the switches were off, but on inspection, were found to be faulty and shorting. Why were they faulty, and who was responsible? That man may have lost his life, as we all know, a "prop" very seldom gives anyone a second chance.

Capt. A. F. Muir returned during the week from Marseilles. It is to be hoped he will wear his famous yellow beret about the aerodrome, as it will add a touch of colour and blend well with the soft green effect of the billiard room, and the dull brown of the Croydon Aerodrome mud.

"Paddy" Flynn has been to the aerodrome several times lately in an invalid chair, and taking all things into consideration, he seems to be quite cheery, and making good progress

To carry out the work two special Junker freighters of the type G31 are being ordered. These machines are all-metal low-wing monoplanes, each driven by three Pratt and Whitney "Wasp" engines. The area which it is proposed to dredge is shown on the map of the gold fields.

The importance of the airways in New Guinea is bound to go on increasing so long as the gold mining continues. An air link between the island and Australia seems to be a natural development of the enterprise, and it is interesting to learn that the Queensland Air Navigation Co. Ltd., is considering the purchase of a flying-boat to connect the port of Cairns with New Guinea.

towards recovery from his recent crash. It is plain to see, though, that he has been through a very rough time. Every one wishes him a quick recovery and good luck, and hopes the loss of his limb will not prove such a big handicap to him. He is a plucky fellow, and deserves a good ground job with his company.

On Saturday, the first Argosy left for Africa—G—EBLO., piloted by Capt. O. P. Jones. A large proportion of the staff assembled to cheer him off. He made Marseilles in just over 5 hr., an excellent performance. To watch Jones flying an Argosy, or any other aircraft, is a pretty sight; it seems to be second nature with him. I consider him one of the finest commercial pilots of to-day—he is very little in the limelight—solely for the reason that he hates publicity, but he certainly is a great pilot. It will be remembered that Capt. Jones has twice brought H.R.H. The Prince of Wales from Paris.

On the same day, G—AAEJ. broke the London-Cologne record on the Indian Mail service. Mr. Wheeler did the trip in 2 hr. 15 min., which includes taxiing out, and taxiing in at Cologne, as I understand that is the regulation for the timing of aircraft, so actually his flying time from the take-off to the landing would be about 2 hr. 5 min., a remarkable show.

Mr. W. Lindsay Everard, M.P., the popular chairman of the Leicestershire Aero Club, visited Croydon on Saturday. He was en route for Paris in his new "Puss-Moth," piloted by Flt-Lt. Stewart David. Mr. Everard is the patron saint of aviation in the Leicester district and the Leicestershire Aero Club is certainly one of the most go-ahead clubs in the country, and quite a few of our Croydon staff have returned and told us of the marvellous parties given by these good folk of the Midlands.

The announcement of the rules governing the King's Cup Air Race was not very well received here. It certainly does not seem very fair to the professional pilot. It so happens that the race is usually run on a day when bad weather conditions prevail—surely such is the chance of the professional pilot to score. Going back to the years 1922 and 1923, one seems to remember Frank Courtney and the late F. L. Barnard recording their successes on really bad weather days. In 1925, F. L. Barnard again won His Majesty's coveted award, when (I know some of you will remember) a certain high personage of today landed near Luton and telephoned to Commander Perrin of the Royal Aero Club to stop the race because he thought the conditions were far too bad for the remainder of the competitors!! What, I am inclined to ask, is the position of Imperial Airways' pilots who are on the Reserve of Air Force Officers regarding this race? And again, what is the position of the serving R.A.F. officer who possesses a "B" licence?

The Air Union company have been having a slice of bad luck recently. On Saturday a Breguet aircraft, piloted by M. Bart, arrived at Lympne, and in landing during a particularly nasty gusty period crashed near the eastern boundary in the darkness. Fortunately, his six passengers escaped unhurt; the flying mechanic was cut and bruised, and after receiving the attention of Sgt.-Maj. Dupe and his ever ready band of assistants, he was taken to Folkestone Hospital.

On Monday, a Liore aircraft bound from Croydon to Paris forced landed at Smarden with engine trouble and lost the undercarriage and damaged both lower planes. The only passenger was M. Bart returning to Paris minus his Breguet, and he received minor cuts. Such is the fate of pilots!

The traffic figures for the week are; passengers 232, freight 25 tons.

P. B.

# AIRISMS FROM THE FOUR WINDS

## The Prince and the Buenos Aires Exhibition

T.R.H. THE PRINCE OF WALES and Prince George left Hendon by air on Friday, January 16, on the start of their journey to South America. The flight was made in the Prince of Wales' "Puss Moth" G-ABBS, piloted by Mr. E. H. Fielden. After the arrival at Le Bourget, the Princes went on by train to Santander, in Spain, to join the ss. *Oropesa*. The "Puss Moth" was then flown back to England and will be sold. Another machine of the same type has been shipped to Buenos Aires for the use of the Princes and his brother during their stay in South America. The Prince's new "Puss-Moth" is being taken to Buenos Aires by the carrier H.M.S. *Eagle*, which carries normally three flights of the Fleet Air Arm. At present, these flights are: No. 402 Fleet Fighter Flight with "Flycatchers," No. 448 Fleet Spotter Flight with "Fairey 3F's," and No. 460 Fleet Torpedo Bomber Flight with "Ripons." In addition, there is on board a special flight composed of one Hawker "Fury" with Rolls Royce "F" engine, one Hawker "Osprey" (the naval version of the "Hart") with "F" engine, and one "Fairey 3F" with Armstrong-Siddeley 510 h.p. "Panther" engine.

## R.A.F. Cairo-Cape Flight

THE flight of three Vickers Victoria aircraft of No. 216 (Bomber) Squadron, which are making the annual Service exercise in flying from Cairo to the Cape and back, reached Juba, from Malakal, on January 16. Next day they flew to Entebbe, Uganda, where they engaged in troop-carrying exercises with a detachment of the King's African Rifles. On January 20 they proceeded to Nairobi.

## Italian Atlantic Squadron at Rio

THE Italian squadron of Savoia S55 flying-boats, under the command of Gen. Balbo, has completed its remarkable cruise from Italy to South America. Eleven of the 14 machines, which set out from Rome on December 17, 1930, completed the last stage of their 6,400-mile cruise, when they flew in formation from Bahia to Rio de Janeiro, Brazil, on January 15. The arrival of the squadron was the occasion of wild scenes of enthusiasm on the part of a vast crowd gathered to welcome them. This last stage, about 2,000 miles, was perhaps the most dangerous of the whole cruise, for they had to fly over treacherous jungle—with no possibility of landing—inhabited by wild beasts and uncivilised Indians. Sig. Mussolini, on hearing of their arrival, sent a long message to Gen. Balbo, congratulating all the members of the squadron on the successful conclusion of the "flight willed by me, and superbly accomplished by you." After referring to the death of the five airmen at Bolama, Sig. Mussolini said that the Italy-Brazil flight had no precedent in the history of aviation and had shown what Italian aviation was as regards men and machines in the ninth year of the Fascist regime. He concluded his message by announcing for next year "an even greater aerial feat"—a formation flight across the North Atlantic? In a final lengthy report to Rome, Gen. Balbo stated that he hoped that their experiences would be useful not only to Italy but to aviation throughout the world. He declared that the percentage of casualties was far lower than he had estimated, and that, in spite of the exceptionally bad weather at the outset, the forced descent in the Balearic Islands proved the Savoia flying-boats were amazingly seaworthy. He considered that the 56 miles of smooth water in the Bay of Bolama (Portuguese Guinea) made it an excellent base, as a forced descent could be made in comparative safety during the first half-hour or so of a long-distance flight, which was always the most difficult.

General Balbo praised the perfect behaviour of the machines and their engines. Throughout the flight the great problem had been to maintain their formation. "If I had to make an Atlantic flight again," he said, "I would rather cross the ocean alone three times from one side to another than cross it once in a formation flight." It is reported that the Brazilian Government is proposing to acquire the 11 Savoia flying-boats in exchange for their value in coffee.

## Miss Amy Johnson Flying Home

MISS AMY JOHNSON left Warsaw for England in her Gipsy Moth, *Jason II*, on January 18, but she had to make a forced landing near Kłodawa—midway between Warsaw and Posen—owing to a choked petrol feed. After the trouble had been put right by mechanics of the Polish Air Lines, Miss Johnson resumed her journey on January 19, and flew to Tempelhof

Aerodrome, Berlin; next day she proceeded to Hanover. The D.H. Moth, *Jason*, on which Miss Johnson flew to Australia, will be exhibited permanently in the Aeronautical section of the Science Museum at South Kensington as soon as room can be found for it.

## Capt. Matthews Delayed

CAPT. F. R. MATTHEWS started from Port Darwin in his "Puss Moth" for England on January 14, but returned after an hour's flight, having encountered heavy storms over the sea.

## Missing Atlantic Flyers

THERE is still no news of Mrs. Beryl Hart and Mr. Mac Laren, who set out from Bermuda in their seaplane *Trade Wind*, for the Azores, on January 10. It appears that the reports that their machine was seen to fall in the sea off the island of Sao Miguel are incorrect.

## Reduced Fares on Canadian Airways

ACCORDING to the fare schedule put into effect by Canadian Airways, Limited, passenger rates in eastern Canada are now little more than the railway fares between important centres of population. On all routes out of Montreal passengers will be carried for slightly more than five cents a mile. The rate for the short journey between Saint John and Moncton, N.B., works out at six cents a mile. The corresponding railways fare including the normal Pullman or sleeping car charges would only be 20 per cent. less than the cost of travel by aeroplane. The new passenger fares quoted by Canadian Airways, Limited, are believed to be considerably lower than those now prevailing in the United States, the average on all routes in that country being estimated at 10½ cents a mile, the lowest (operating between Detroit and Chicago) being 7½ cents a mile. The Canadian rates are also claimed to be less than those charged by Imperial Airways, Limited, on the London-Paris route, working out at about 13 cents a mile. Canadian Airways, Limited, it will be recalled, is a new Company formed by the recent amalgamation of Western Canada Airways, Limited, and the Aviation Corporation of Canada, an interest in the Company being owned both by the Canadian National Railways and the Canadian Pacific Railway Company. The new passenger rates are confined to the regular mail 'planes, as it is impossible to operate two or more machines at such low rates without the air mail business. It is anticipated, however, that the demand for air transportation will necessitate the addition to all routes of larger machines able to absorb the normal overhead charges. The new airways fare from Montreal to Toronto is \$17.50. For the distance of 334 miles between these points the railway companies charge \$14.60 including the lower berth sleeping car rate. From Montreal to Windsor, Ont., the aeroplane fare is \$29.10 as against \$24.25 for transportation and berth by train, the distance being 561 miles. From Montreal to Saint John, N.B., 482 miles, the air rate is \$25.85 as compared with the railway fare of \$21.55. Return fares for the journey by air are in each case about 180 per cent. of the single fare. In this connection it is interesting to compare the rates levied in Western Canada by Western Canada Airways, Limited, a Company forming part of the new amalgamation. A single fare of \$44 is charged for the journey from Winnipeg to Calgary, a distance by rail of 832 miles. The fare between Winnipeg and Edmonton (848 miles) is \$46.00.

## Luxor Goggles and Insurance

E. B. MEYROWITZ, of Old Bond Street, W.1, announce that they have made a special arrangement with Lloyd's whereby all purchasers of Luxor Goggles during 1931 will be given free insurance up to £1,000, which will be paid in case of injury to an eye caused by the splintering of the lens of any of their Luxor Goggles fitted with Triplex or Acetex safety glass lenses. To those who have purchased Luxor Goggles prior to 1931 they will arrange for a similar Policy (good for one year) upon payment of 1s. The amount of insurance can be increased from £1,000 to £5,000 by paying for each thousand pounds on Policy. This is certainly a very interesting and enterprising scheme—but from what we know of Luxor Goggles, we do not think Lloyd's will go "broke" on this account!

## Aeroplanes Survey Niagara

AEROPLANES of the Niagara State Reservation Commission flew over the Falls on January 19 in order to make a survey of the effects of large slides of rock which recently occurred at the crest of the Falls on the American side.

# SOME ASPECTS OF THE DESIGN OF SEA-GOING AIRCRAFT

By A. GOUGE, B.Sc., A.F.R.Ae.S., General Manager of Short Brothers

Being a lecture delivered before the Royal Aeronautical Society on January 8, 1931

(Concluded from page 64.)

## The Range of a Large Flying-Boat

SO much has been written of late regarding long-range flying-boats, that it may not be out of place here if I give you the actual figures that have been obtained on a large flying boat recently completed by the firm with which I am connected. This flying-boat, which was not built entirely for range purposes, has normal civil safety factors at the weight under consideration. In other words I consider it useless to talk of range obtained by reducing the safety factors below those required for a normal certificate of airworthiness.

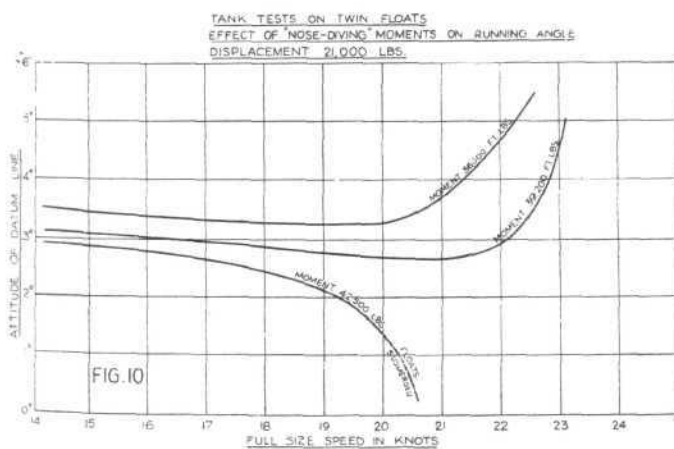
On Fig. 16 will be found the range of this boat plotted against useful load exclusive of fuel.

From the curve it will be noted that the absolute maximum range is approximately 2,400 miles, the whole of the useful load being fuel. At a range of 2,000 miles the useful load apart from fuel is 4,000 lb. and finally the total useful load is 16,600 lb., which represents 44.5 per cent. of the total weight of the flying-boat. From the above it appears that it is possible to fly from 1,500 to 2,000 miles in still air in one hop, carrying a fair amount of paying load, but I am afraid the charge per lb. would have to be high to make such a flight a paying proposition.

## Single-Strut Engine Mounting and Absence of Chine Struts

A glance at the front view of the flying-boat in the photograph will, at once, suggest two further points in design, which, having received due attention and consideration, have resulted in a considerable cleaning up of the air frame and consequent increased overall efficiency of the machine in the air. I refer to:

- (1) The installation of the power unit.
- (2) The absence of struts from under the engine strut to the chine of the hull.

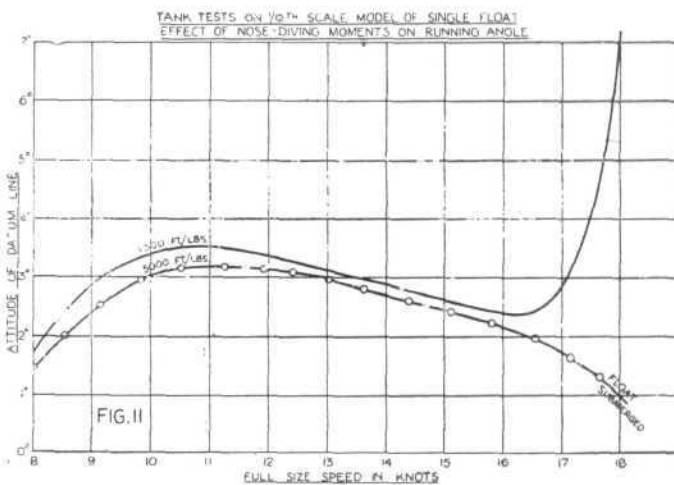


Dealing with (1), it has for long been recognised that the usual methods of strutting engines between the wings, with their attendant vibratory struts, etc., results in considerable interference with air flow around the adjacent wing structure, entailing excessive air drag.

A satisfactory attempt has now been made to overcome this difficulty by installing the power unit in a monocoque nacelle into which is built, either integral with it or separate, one very robust vertical member between the wings in the plane of each front and rear spar. As an additional refinement this member may be tapered, being widest at the junction with the nacelle. Suitable fairings are incorporated to house all necessary pipings, wires, etc. In the tandem arrangement shown these members are stayed horizontally by another much smaller member carried to the cabane bracing. The stress assumptions imposed upon the vertical members were: four times engine weight horizontally plus torque and thrust reactions, and flying loads from various

cases. In addition, periods of vibration of both vertical and horizontal members were investigated for comparison with engine periods.

The monocoque nacelle itself is cut down to its minimum frontal area consistent with efficient cowling of the engine and general accessibility to parts requiring frequent attention, such as engine pumps, magnetos, plugs, etc.



The resulting structure is satisfactorily rigid under all running conditions of the engines, entailing very little additional weight and making for increased simplicity, eliminating the attendant trouble of vibration on a large number of pins and bolts to such an extent that maintenance required on the structure itself is nil.

On later installations this vertical member has been used for supporting the radiator above the nacelle, and has thus reduced another source of interference with the wing.

Dealing with (2), chine struts have always been troublesome by reason of liability to damage by attendant boats and resistance and interference with the neighbouring wing.

Hence, an endeavour has been made on the aircraft, as shown on the photograph, to substitute a structure in lieu of these external members. This has been done, and the structure faired over by gradually "blowing up" the wing section from its junction with the main plane to its point of contact with the hull framing. This "blow-up" is carried out on chord as well as depth, and at the hull the section is approximately twice the normal depth of wing. The resulting shape between the two spars is ideal for fuel tanks, inasmuch as it is possible to extract every gallon of fuel from the tank in any normal attitude of the machine without the necessity of employing any elaborate sump arrangements.

This scheme of bracing is, however, slightly heavier than the normal type of chine strut, but the increased weight is more than compensated for by the overall gain in efficiency to the machine. Undoubtedly, these two points alone have had a marked influence towards improving the L/D of the complete structure.

## THE DISCUSSION

In opening the discussion, WING. COMM. CAVE-BROWNE-CAVE said that he would feel very glad if Mr. Gouge could compare the efficiency of the single float seaplane or the single hull flying-boat with that of the twin float seaplane or twin hull flying-boat. He questioned whether this was entirely a matter of float interference. He then queried whether Mr. Gouge's suggested remedy of moderately supercharged engines for assisting the take-off in tropical climates under conditions of varying atmosphere and density was entirely sound. He felt that in many cases a fall in density was due to a rise in temperature and in such conditions he doubted whether a supercharged engine would be a sound remedy. Commenting upon the tests in the tank carried out by Mr. Gouge, he said

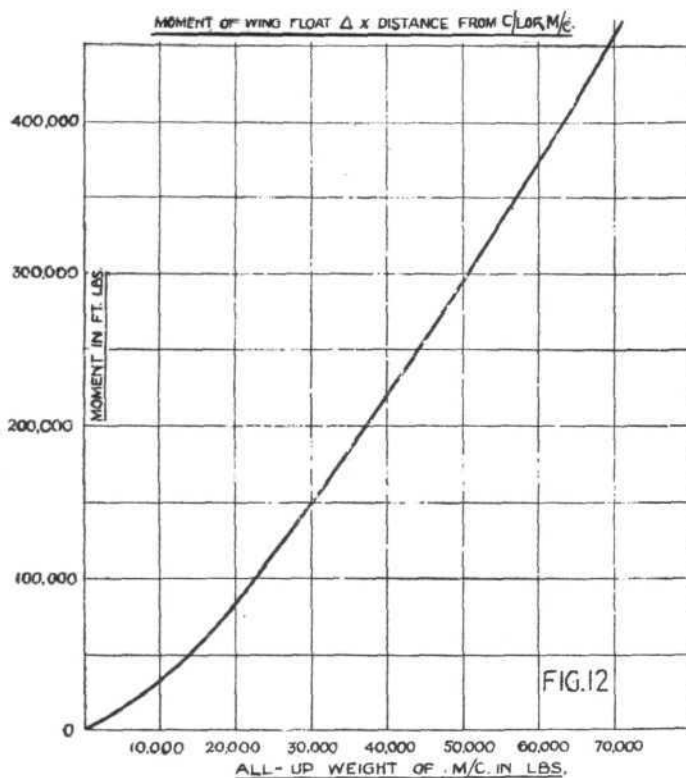


FIG. 12

that these appeared to have been done in calm water and he would like to know whether anything had been done in producing a standard wave for such tests, since the power a pilot had to hold a machine down on the water and prevent premature take-off due to waves was very important. A matter also affected by waves was the test which Mr. Gouge had mentioned as carried out to determine the proximity of the bow wave to the propeller disc and Wing Comm. Cave-Browne-Cave felt that this would be much more valuable if it were done in rough water conditions. In conclusion he said, he would like to congratulate Mr. Gouge for his daring but entirely successful production of a single strut engine mounting.

Mr. H. E. WIMPERIS (Director of Scientific Research) said he would very much like to congratulate Mr. Gouge on his work at Short's, since from the beginning he had always viewed Mr. Gouge's work with admiration. Mr. Gouge was one of the first to start work on a tank solely for aircraft purposes and this tank differed very largely from that which had hitherto been in use for ships. The range of speeds to be dealt with was very much greater and the work was therefore very much larger. Mr. Gouge's tank though small had proved to be very accurate, and the tank which the Government were constructing at Farnborough was based very much on the results of his work. In fact he said they were greatly indebted to Mr. Gouge for his pioneer work and were profiting thereby. It was interesting, he said, to note that the tank at Rochester was not nearly so large as those used either in France or the U.S.A. and he would be glad, he said, to have Mr. Gouge's views on the future of tanks in general. Mr. Wimperis said he was interested to hear that Mr. Gouge considered that wing tip floats would always be necessary even for boats very much larger than the Do.X. He himself, however, considered that when we came to boats of 100 tons or more displacement the metacentric height would be found to be such as to make the boat stable in itself and the use of wing tip floats therefore unnecessary. He would like to ask Mr. Gouge, he said, whether he considered experiments on the lines which had been suggested by the Principal Scientific Officer at Felixstowe as likely to produce good results. These consisted essentially of building a, say, half-scale model of the hull of a flying boat and then taxiing it on the water by means of the upper hull of a Moth attached to it and between the Moth and the hull they proposed to insert a steelyard arrangement for measuring the drag directly, much in the same way as had already been done on certain Parasol monoplanes.

Mr. HANDLEY PAGE said he was particularly interested in the single strut type of engine mounting and would like to know how the torque reaction was taken. Another point which interested him was the wake effect that the four-engine type of installation seemed to have. He quoted instances during the end of the war in his own large bombing machines which, incidentally, Col. Sempill had carried out tests on,

where there was a very appreciable difference in the effectiveness of the controls when the front or rear engines on either side were stopped. He said he would like to know whether Mr. Gouge had any knowledge or data on similar effects in a machine such as the "Singapore II."

SIR ALAN COBHAM said he felt that Mr. Gouge already had sufficient questions to answer and there were only one or two remarks he would like to make. He said that he had had considerable personal experience of Mr. Gouge's methods and had always had the greatest confidence in him. With regard to the difficulties of take-off in the tropics in conditions of varying density, he said that his personal experience was that these were entirely inconsistent, and that he did not think either heat or altitude was the controlling factor but that it was something obscure to do with the place in question. He quoted instances, when, in the Sudan with a temperature of 120° F. in the shade, he had experienced no difficulty in take-off whatever, yet sometimes in other places at very much lower temperatures he had had the greatest difficulty.

Mr. O. E. SIMMONDS (Designer of Spartan Aircraft, Ltd.) said he would like to offer his thanks to Mr. Gouge for so openly publishing the mass of information which designers had always known must exist at Short's. He felt, he said, that it was a great pity that Mr. Gouge had found it impossible to include a similar curve to No. 15 for the weight of hulls, and he hoped that it would be found possible to include this when the lecture was issued in the Society's Journal. There was another curve which he suggested might be valuable and that was a range curve plotted against air miles per gallon for increasing weights of hull. He then referred to the remarks made by Mr. Gouge on the subject of single float seaplanes, and he pointed out that we in this country have confined ourselves to flying boats with single hulls or seaplanes with twin floats and he felt that we were probably too conservative in this matter. Both Germany and Italy, he said, had shown their enterprise in developing other types and he made a plea for us here to investigate both the twin hull flying boat and the single float seaplane.

Mr. F. TYMMS (Chief Technical Assistant, Directorate of Civil Aviation) said that he was particularly interested in the question raised by Mr. Gouge as to the distance and difficulties of take-off in the tropics. He pointed out that the atmospheric densities to be found on the Cape-Cairo route, which is shortly to be opened, were very much lower, and in some cases might be only 0.78. This matter was therefore a vital one for civil aviation, and one which must be investigated very fully. Another question was that of making landings and taking off not only in small spaces and confined channels, but also across wind, and he would like to know whether Mr. Gouge had any data on the relative merits of

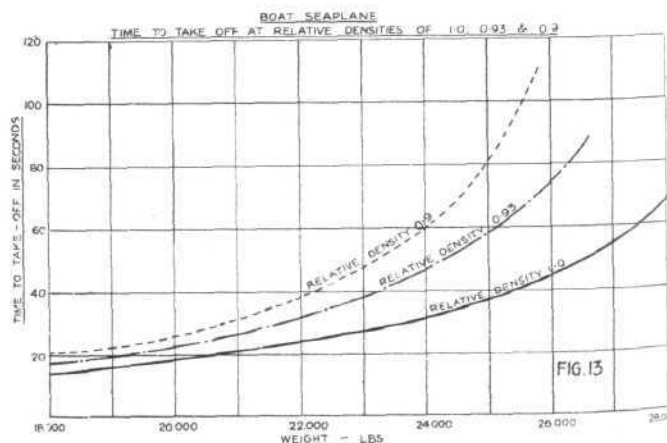


FIG. 13

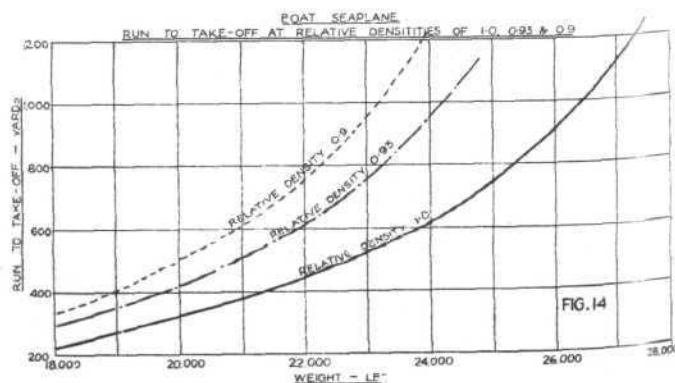


FIG. 14

the single-hull flying boat and the twin-float seaplane in these conditions. There was one point, he said, which struck him as relevant, and that was that it would appear that with a high-wing monoplane-seaplane, such as the Valetta, there would be less chance of damage to the wing when operating in narrow rivers such as to be found on the Nile, for there the banks are almost invariably low and the wing would ride clear over any small obstructions, whereas with the biplane flying-boat type both the wing and its tip floats was a source of constant danger.

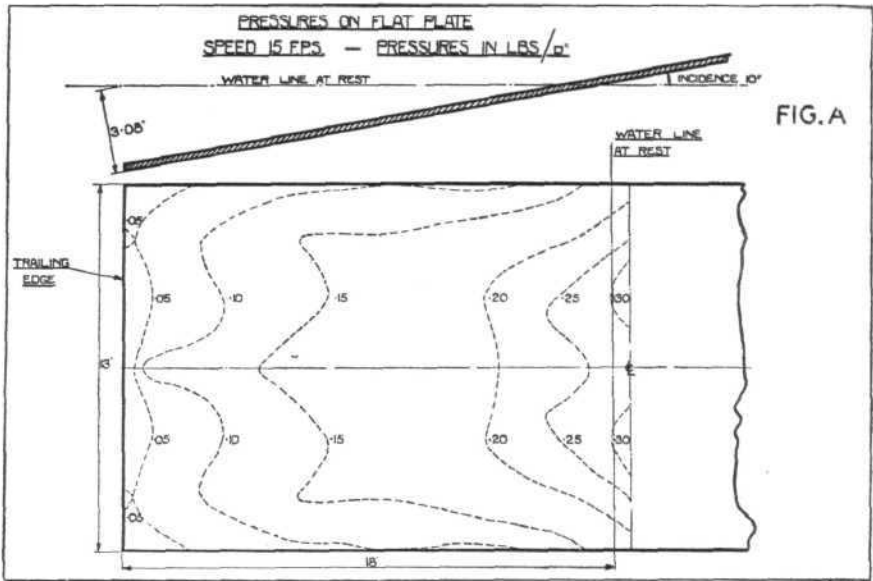
MR. LANKESTER PARKER (test pilot for Short Bros.), when called upon, said there was little he could add to Mr. Gouge's informative paper, but he would like, if he might, to answer Mr. Handley Page's question concerning effect on the controls on the tandem arrangements. He said that he had tried every conceivable arrangement of engines both on and off, on the Singapore II, and had not been able to distinguish any difference in the effect of the controls.

MR. R. C. KEMP (Director of Air Survey Co., Ltd.) said he heartily agreed with Sir A. Cobham's views concerning the inconsistency of a take-off in tropical conditions. He himself had found that in many cases, in spite of having floats which Mr. Gouge had told him were extremely efficient, he had been able to take off an overloaded D.H. 9a, while under other conditions he had found it impossible to get off. It was generally found, he said (jokingly), that some silly trouble such as water in the floats was the reason. For instance, in Rangoon under outwardly exactly similar conditions to those in Calcutta he had found it quite possible to get off, whereas in the latter place he had sometimes found it well-nigh impossible.

MAJOR GREEN (Armstrong Siddeley Motors Limited) said, when asked, that he thought that a moderate degree of supercharging might be permissible in tropical conditions with modern engines, but that he considered other steps should also be taken for improving the take-off.

DR. LACHMANN said that in Germany they had discovered a law of similarity between the floats and hulls, and a paper had recently been read in that country which was very useful for comparing the performance of the two. One firm he said had found the take-off was increasingly better accordingly as the size of the hull increased, and he wondered whether perhaps the resistance of a hull increased less in regard to its size than did that of the twin floats of a seaplane.

WING-COMM. T. E. HOWE said that he agreed with Sir A. Cobham's views. They had found that very often in the Persian Gulf it was easy to take-off at any time of day and under any conditions of temperature or density, but that sometimes in other places great difficulty was experienced. He then put forward a plea for greater attention to the crews' living quarters in large flying boats. These, he said, were too cramped. One could not stand up; in the nose there was insufficient room for comfortable working when mooring the boat, and although they were better than they used to be he felt that they could be improved greatly. The tailplane, he said, was often too low and was apt to suffer damage from its proximity to the water in rough seas. He also asked that the



lower centre section might, in the case of multi engine machines, be kept clear for use as additional deck space in tropical climates.

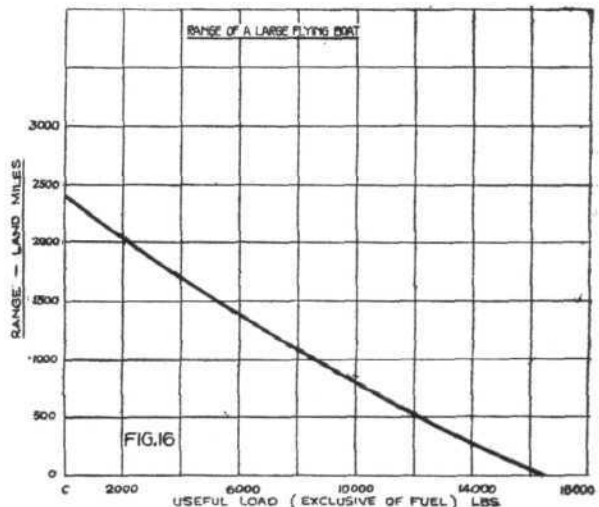
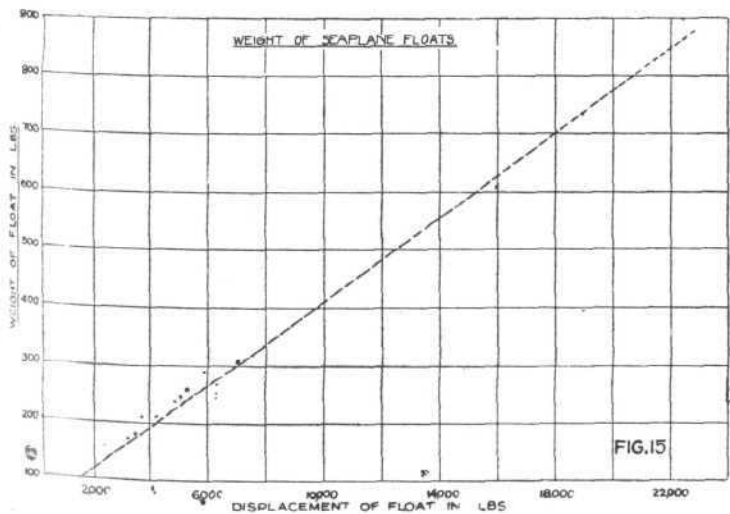
MAJOR KENNEDY put forward the suggestion that the nomenclature of flying boats and seaplanes was at present leading them into difficulties since for instance, you already had the Singapore II and when discussing this machine one would be apt to get muddled if one would have to announce the fact that it was flying to Singapore. This would also apply to such boats as the Calcutta and the Southampton, and he suggested that the use of numbers would be easier.

MR. L. LOWER in referring to Fig. 5 said that it was shown that the hull efficiency was much greater when the hull was slightly trimmed down forward. In this case he would like to point out that the tail loads involved in holding the hull in this trimmed forward position greatly detracted from the curve values as shown, and the curves were therefore only relative and could not be taken as an actual measure of the loads involved.

MR. GARNER said that he felt that Mr. Gouge was somewhat pessimistic about wing tip floats, because the size of the float would surely be determined very largely by its position, and since the larger the hull became the lower the C.G. went, and therefore a still smaller float was required. With regard to the take-off in the tropics he said that he thought it might be a matter of engine power, since engine power was very largely in proportion to the density.

MR. O. SHORT (Short Bros., Rochester) referred to the fact that he had the pleasure of meeting Mr. Gouge every day of his life, and said that he would like to congratulate him on such an ably delivered paper. He felt sorry for him, however, in that he had so many questions to answer and suggested that the majority of the answers should be in writing in the Journal of the Society.

COL. SEMPILL in concluding the discussion said there were one or two points he would like to raise. The first one was in regard to the use of stainless steel and particularly with regard to stainless steel sheet. He said that reference had been made to a Calcutta which had been in use in the Mediterranean



for 1,500 flying hours and he would like to know whether Mr. Gouge or any of his staff had inspected this machine, and if so what effects there were of corrosion. He said that he agreed with Mr. Wimperis in that he felt that when weights of 100,000 lb. or more were reached in flying boats, wing tip floats would not be necessary for stability. He asked Mr. Gouge his reasons for stating that a larger reserve of buoyancy was necessary in twin float seaplanes than in single hull flying boats. He also asked that Mr. Gouge should find it possible to include the curve for the increase of hull weights when the paper was published. In conclusion, he asked that the assembly should receive Mr. Gouge's paper with acclamation and that they should make it quite clear that in spite of his diffidence Mr. Gouge would have to come forward willingly on the next occasion he was asked.

MR. GOUGE, in reply, said he would do his best to answer a few of the questions, leaving the rest to be dealt with in writing. Wing-Comm. Cave-Browne-Cave, he said, questioned the relative efficiency of floats and hulls, and he said that the smaller efficiency of the former was particularly due to inter-float interference, and also to the cross struts and bracing which were necessitated. Seaworthiness of floats, he said, entirely depends upon their size. He stated that he had offered the suggestion that moderately supercharged engines would be desirable for take-off in tropical conditions, but he considered that they would also have to adopt other means as well. Standard waves, he said, were reproduced during their tests in the tank, but the results were by no means satisfactory, since the interference of the sides of the tank made it very difficult to approximate to the real thing. Concerning the future size of tanks, he said that had he realised at the beginning the growth flying boats

were going to make, he would undoubtedly have had a larger tank, and he suggested, in future, that they should have something between 10 and 12 ft. wide. On the question of lateral stability, he said, the C.G. does not always go down in very large boats, since the C.G. of the superstructure is always higher, and as this, of course, increases with the size of the boat, the C.G. of the whole is also kept up. He said he was very interested in the proposed full-scale results at Felixstowe, and would like to know more about them. In answer to Mr. Handley Page, he said "yes," the reaction is taken in bending in the struts. With regard to Sir Alan Cobham's take-offs in the tropics, he said no doubt he had got off, but since he had seen the record he knew that in some cases it had taken over 90 sec. In answer to Mr. O. E. Simmonds, he regretted that he had not sufficient data to construct the hull curve asked for, since they had not confined themselves at Rochester to either military or civil machines, and were unable to compare the two types for this purpose. In answer to Mr. Tymms, he said that matters were conflicting, since the Vee-bottom hull and float which was essential for efficient operation in rough water was not so efficient in calm, and was certainly very bad for cross wind landings. As matters were, floats were probably about equal to boats for this. In answer to Mr. Kemp, he said he would like to know how long it took him to get off sometimes. Finally, in answer to Col. Sempill, he said he felt quite sure that stainless steel would eventually become universally used. Concerning corrosion on the machines in the Mediterranean, he said they had the second Calcutta back to the works after it had run ashore, and there had been absolutely no evidence of corrosion at all, and the refit had necessitated no replacements, all parts being replaced as they were.

## KING'S CUP AIR RACE, 1931

THE Royal Aero Club has received the approval of His Majesty the King to the following regulations to govern this year's Air Race for the King's Cup:—

**Competitors.**—The entrant and pilot or pilots and passengers must be British subjects.

The Race shall be confined to "Amateurs."

Neither the entrant, the pilot, nor passengers (if any) shall be engaged as proprietor, partner, director, official or employee of any firm of manufacturers, dealers or operators in aircraft or aircraft engines, or employed as a professional pilot. R.A.F. pilots of amateur status, as defined above, are eligible.

In order to confine the Race to those of amateur status, the Royal Aero Club reserves the right to refuse to accept any person as entrant, pilot, or passenger without assigning any reason.

**Aircraft.**—The Race is open to any type of *bona-fide* civil aircraft. The aircraft, including the engine or engines,

must have been entirely constructed in the British Empire. For the purposes of the Race, a *bona-fide* civil aircraft is an aircraft which was originally designed, and subsequently constructed for use in civil aviation activities.

In any question regarding the eligibility of any aircraft, the decision of the Royal Aero Club shall be final.

The aircraft entered shall have been registered in the name of the entrant and Certificate of Airworthiness issued not later than May 30, 1931.

**Handicap.**—The aircraft will be handicapped for the complete circuit, according to estimated performances. The minimum speed at which aircraft will be handicapped will be 80 m.p.h.

**Course.**—It shall be a one-day race, over a course of approximately 1,000 miles, the longest leg not to exceed 200 miles.

The Royal Aero Club reserves the right to hold an eliminatory contest if necessary.

## THE SCHNEIDER TROPHY

ON Thursday, January 15, the Air Ministry issued the following communiqué:—

"In September, 1929, a few weeks after the British victory in the Solent, the Air Ministry announced that the Government had had under review the future policy in regard to the Schneider Trophy contest in 1931 and subsequent years; and that, after careful consideration, it had been decided that a Royal Air Force team would not again be entered, thus leaving British participation to private enterprise under the auspices of the Royal Aero Club. The main considerations influencing this decision were that, owing to Government participation in recent years, the contest had assumed a character not in accordance with the intentions of M. Jacques Schneider, its originator and the donor of the trophy, and that, although the entry of a Royal Air Force team had given a much-needed impetus to the development of high-speed aircraft, sufficient data had now been collected for practical development in this direction, and that the large expenditure of public money involved was therefore no longer justifiable.

"Since December last, however (when the question of the validity of the Italian and French entries was settled by the Fédération Aéronautique Internationale), strong representations have been made to the Air Ministry for a reversal of this decision, either in whole or part, that is, either that a Royal Air Force team should be organised by the Air Ministry, or that Royal Air Force pilots should be loaned to the Royal Aero Club or some other private organisation. The matter has accordingly been again considered.

"The Government has decided that in the present financial situation the expenditure of public money involved (not less than £80,000 if a Royal Air Force team were organised) is not justified, and that their previous decision must be strictly adhered to; the defence of the trophy and all incidental expenditure must be left to the Royal Aero Club or private enterprise, and the Government should not give any assistance either direct or indirect, whether by the loan of pilots, aircraft, or other material, by the organisation of the race, by the policing of the course, or in any other way."

On Monday, January 19, the committee of the Royal Aero Club, with Sir Philip Sassoon in the chair, met to

consider the new position. The meeting lasted a little over an hour. On its conclusion the following statement was issued:—

"At a fully attended meeting held this evening the committee of the Royal Aero Club considered the question of the Schneider Trophy contest, and it was decided to adjourn the meeting in order to explore every avenue whereby the trophy may be defended. The club will leave no stone unturned to achieve this object, and feels sure that this is in general harmony with the wishes of the British public."

The trophy itself is now on its way to Buenos Aires for display at the British Exhibition, which will shortly be opened there by Air Marshal H.R.H. The Prince of Wales.

A suggestion that Gen. Balbo should be asked to fly the trophy back to Italy in his seaplane still needs confirmation.

On the morning of Tuesday, 20th inst., the Committee of the Club again approached the Air Minister, and asked whether, if £80,000 (which had been estimated as the cost to the Government of organising the race and defending the trophy) were raised privately by the Royal Aero Club, the Government would then undertake to defend the trophy. The Air Minister referred the question to the Cabinet the same evening, and the reply made was that even in that case the Government would do nothing. Next day Sir Philip Sassoon raised the matter again in the House of Commons, and met with a further refusal on some vague excuse of "policy and principle."

(Continued on page 88)

# THE ROYAL AIR FORCE

London Gazette, January 13, 1931.

## General Duties Branch

The follg. are granted short service commns. as Pilot Officers on probation with effect from and with seny. of December 29, 1930:—R. G. C. Arnold, R. J. Bennett, E. R. Berry, H. G. Blair, G. E. O. Browne, W. D. Dennehy, V. P. J. G. Doherty, E. A. Douglas-Jones, J. J. A. Ellison, W. R. Farley, E. D. Green, H. Harkness, G. Hinkley, I. V. Hue-Williams, G. T. Jarman, G. L. C. Jenkins, E. D. Redgment, R. C. Richmond, N. P. Samuels, F. C. Savill, F. A. A. H. Strath, C. E. L. Tapley, F. S. Wakeham, J. M. Warfield, R. G. Whitehead, O. P. E. Williams, J. M. Wilson, R. I. B. Winn. Lt.-Cdr. C. J. N. Atkinson, R.N., is re-attached to R.A.F. as Flight-Lieut., with effect from January 4 and with seny. of July 1, 1927.

The follg. Pilot Officers are promoted to rank of Flying Officer:—A. C. Larmuth (October 14, 1930); H. E. Dicken (December 17, 1930); L. R. S. Freestone (December 17, 1930).

Sqdn.-Ldr. J. S. T. Fall, D.S.C., A.F.C., half-pay list, scale B, is transferred to scale A with effect from January 1, and is restored to full pay with effect from January 8. Lt.-Cdr. T. O. Bulteel, R.N., Flight-Lieut., R.A.F., ceases to be attached to R.A.F. on return to Naval duty (January 1).

The follg. are placed on the retired list on account of ill-health:—Sqdn.-Ldr. T. H. Newton, D.S.C. (December 31, 1930); Flight-Lieut. K. L. Harris (January 14).

The follg. are transferred to Reserve:—CLASS A.—Flight-Lieut. A. P. K. Hattersley (January 11). CLASS C.—Flying Officer A. M. Butt (January 1).

Flying Officer A. B. Smith, M.C., relinquishes his short service commn. on completion of service (January 14); Capt. R. C. Giles, R.M., Flying Officer, R.A.F., relinquishes his temp. commn. on returning permanently to duty with the Royal Marines (December 2, 1930).

## Stores Branch

The follg. Warrant Officers, Class I, are granted permanent commns. as Flying Officers on probation with effect from the dates stated and with seny. of January 5:—188 E. E. Copper, 26152 G. A. Durnford, 1745 W. Eccles,

7723 F. B. C. Fundry, 798 F. Lamdin, M.B.E., 21338 I. Lloyd, 3484 G. J. E. Parsons, 9994 P. S. Stewart (January 5); 531 C. H. Baker, M.B.E. (January 6).

## Medical Branch

The short service commn. of Flying Officer E. W. B. Griffiths, M.B., Ch.B. is antedated to August 5, 1929.

## Chaplains Branch

The Rev. K. C. H. Warner, D.S.O., M.A., is granted a permanent commn. (January 14).

## RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

Flying Officer W. J. Brett is transferred from Class C to Class A (December 15, 1930). The follg. relinquish their commns. on completion of service:—Flight-Lieut. D. K. Cameron (September 16, 1930); Flight-Lieut. F. J. Watts (December 19, 1930); Flying Officer R. H. Mahon (August 16, 1930); Flying Officer R. Hamilton, M.C. (October 24, 1930); Flying Officer J. F. Bythell (November 2, 1930); Flying Officer E. S. Brinsmead (December 9, 1930); Flying Officer F. R. Eason (December 23, 1930).

The follg. relinquish their commns. on completion of service and are permitted to retain their rank:—Flight-Lieut. W. Halford, D.F.C. (October 24, 1930); Flying Officer E. J. Moule (September 16, 1930).

## Stores Branch

Flying Officer W. B. Francis relinquishes his commn. on completion of service, and is permitted to retain his rank (September 12, 1930).

## Accountant Branch

Flying Officer B. E. Hume Wright relinquishes his commn. on completion of service (November 15, 1930).

## AUXILIARY AIR FORCE

### General Duties Branch

No. 603 (CITY OF EDINBURGH) (BOMBER) SQUADRON.—Flying Officer M. H. Q. White is seconded for a period of one year, under para. 62, Auxiliary Air Force Regulations (September 1, 1930).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

**Wing Commanders:** G. G. H. Cooke, D.S.C., A.F.C., to H.Q., R.A.F. Mediterranean, for duty as Fleet Aviation Officer to Commander-in-Chief, Mediterranean Fleet; 3.1.31. J. H. Herring, D.S.O., M.C., to No. 1 School of Tech. Training (Apprentices), Halton, for Administrative duties in No. 4 Apprentices Wing; 5.1.31. E. Osmond, C.B.E., to No. 21 Group H.Q. West Drayton, for Engineer Staff duties; 10.1.31. T. R. Cave-Browne-Cave, C.B.E., to Half-pay List; 1.1.31. R. W. Hill, M.C., A.F.C., to Oxford Univ. Air Sqn., for duty as Chief Instructor; 2.1.31. F. W. Stent, M.C., to No. 9 Sqn., Boscombe Down, pending taking over command; 4.1.31. H. S. Powell, M.C., R.A.F. Depot, whilst attending Senior Officers Tactical Course (Naval) Portsmouth; 5.1.31.

**Squadron Leaders:** R. T. Leather, A.F.C., to No. 502 Sqn., Aldergrove; 20.12.30. J. W. B. Grigson, D.S.O., D.F.C., to H.Q., Fighting Area, Uxbridge; 6.1.31. R. S. Lucy, A.F.C., to H.Q., Iraq Command; 2.1.31. J. P. Coleman, A.F.C., to No. 6 Sqn., Ismailia; 2.1.31. R. S. Sorley, D.S.C., D.F.C., to No. 8 Sqn., Aden; 2.1.31. G. C. Gardiner, D.F.C., to No. 55 Sqn., Hinaidi; 2.1.31. N. F. D. Buckridge, to Half-pay List; 1.1.31. Alan Lees, A.F.C., to R.A.F. Training Base, Leuchars; 1.1.31. S. T. Freeman, M.B.E., to R.A.F. Depot, Uxbridge; 26.11.30.

**Flight Lieutenants:** G. Martyn, to Aircraft Depot, Hinaidi; 2.1.31. G. S. N. Johnston, to No. 14 Sqn., Amman; 2.1.31. G. R. Oliver, to No. 1 Armoured Car Co., Iraq; 2.1.31. J. W. Jean, D.S.M., to R.A.F. Depot, Aboukir; 2.1.31. A. E. Rogenhagen, to No. 84 Sqn., Shaibah; 2.1.31. C. F. H. Grace, to No. 2 Armoured Car Co., Transjordan; 2.1.31. H. L. P. Lester, to No. 3 Flying Training Sch., Grantham; 31.12.30. E. Brewerton, D.F.C., to Elec. & Wireless Sch., Cranwell; 8.1.31. M. V. Ward, to H.Q., Coastal Area; 9.1.31. G. M. Bryer, O.B.E., A.F.C., to No. 60 Sqn., Kohat; 10.1.31. A. B. Ellwood, D.S.C., to No. 31 Sqn., Quetta; 10.1.31. F. C. B. Savile, F. G. Gibbons, D.F.C., R. N. Waite, all to R.A.F. Base, Calshot; 5.1.31. C. A. Bouchier, D.F.C., to H.Q., R.A.F. India; 10.1.31. N. S. Paynter, B. H. C. Russell, T. W. S. Brown, and R.A.P. Roberts, to R.A.F. Depot, Uxbridge; 11.12.30. H. M. Mellor, to Air Ministry (D.T.D.); 12.1.31. C. S. Riccard, to No. 201 Sqn., Calshot; 7.1.31. R. H. Carter, to No. 204 Sqn., Mount Batten; 7.1.31. E. Thornton, to R.A.F. College, Cranwell; 8.1.31. F. T. Eades, D.F.C., to Station H.Q., Donibristle; 10.1.31.

**Flying Officers:** R. Harston, to No. 208 Sqn., Heliopolis; 2.1.31. F. E. Abbott, to No. 208 Sqn., Heliopolis; 2.1.31. C. E. Chilton, to R.A.F.

Base, Calshot; 12.1.31. G. C. Butler, to No. 210 Sqn., Calshot; 7.1.31. D. F. Satchwell, to No. 204 Sqn., Mount Batten; 6.1.31. P. W. Lowe Holmes, F. D. Lockwood, both to R.A.F. Depot, Uxbridge; 11.12.30. S. R. Groom, to No. 608 Sqn., Thornaby; 7.1.31. R. W. Letchworth, to Station Flight, Upper Heyford; 7.1.31. J. F. Moir, to Central Flying Sch., Wittering; 7.1.31. J. H. Lindell and B. A. Blythe, to R.A.F. Base, Calshot; 5.1.31.

**Pilot Officers:** J. S. Lamb, to No. 2 Flying Training Sch., Digby; 31.12.30. L. R. S. Freestone, to Central Flying Sch., Wittering; 8.1.31. N. C. Walker, to R.A.F. Base, Calshot; 5.1.31. W. N. McKechnie, to Marine Aircraft Experimental Estab., Felixstowe; 7.1.31. L. A. Bullard, to No. 4 Sqn., S. Farnborough; 6.1.31.

## Stores Branch

**Squadron Leaders:** W. C. Green, M.C., to H.Q., R.A.F. Middle East; 2.1.31. F. G. M. Williams, to No. 23 Group H.Q., Grantham; 20.12.30.

**Flight Lieutenants:** E. I. T. Duffield, to Stores and Supply Depot, Aden; 2.1.31. C. J. Elliott, to Aircraft Depot, Hinaidi; 2.1.31. T. G. Bowler, to H.Q., Coastal Area; 20.12.30.

**Flying Officer** L. Taylor, to No. 84 Sqn., Shaibah; 2.1.31.

## Accountant Branch

**Wing Commander** J. Rylands, to H.Q. Iraq Command, for duty as Command Accountant; 2.1.31.

**Squadron Leader** T. C. Miller, M.C., to Aircraft Depot, Hinaidi; 2.1.31. **Flight Lieutenant** G. W. Lynn, to No. 2 Armoured Car Company, Transjordan; 2.1.31.

**Flying Officer** W. F. Quilliam, to No. 2 Armoured Car Co., Transjordan; 2.1.31.

## NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on January 17:—**Capt.**—R. B. Davies, V.C., D.S.O., A.F.C., to *President*, for special service outside Admiralty (Feb. 16), and for Directorate of Organisation and staff duties, Air Ministry (March 2).

**Lieuts. (Flt.-Lts., R.A.F.)**—H. Ditton, to *Courageous* (March 22); and J. B. Heath, to *Glorious*.

**Lieuts. (F.O., R.A.F.)**—D. J. Margetts and J. Brett, to *Victory*, for R.A.F. Base, Gosport; D. A. H. Hornell and A. J. Tildard, to *Glorious*; and J. F. M. Robertson, to *Courageous* (March 22); D. G. F. W. Macintyre, to *Courageous* (March 31); and L. E. Ricketts, to *Courageous*.

## Award of Prize Cadetships, Royal Air Force

The Air Ministry announces:—The Air Council have awarded Prize Cadetships, each of the value of £105 per annum for two years, to the following candidates on the results of the examination held in November, 1930, for entry into the Royal Air Force College, Cranwell:—D. S. Kite, Abingdon School; J. W. W. Hurdall, Charterhouse School; A. N. Bray, Harrow School; E. D. M. Nelson, Dover College; I. G. MacKay, Wheelwright Grammar School, Dewsbury (as a King's Cadet he is granted Titular distinction only); W. R. Brotherhood, Monmouth School; M. J. O. Parish, Uppingham School.

## Transfer of Officers to Indian Army Service Corps

The Government of India state that all existing vacancies in the Indian Army Service Corps have been filled by candidates forthcoming in India. There is a waiting list for further vacancies, but no prospect of any occurring before April, 1931, and it is doubtful whether any R.A.F. officers will be required for another year.

## The Royal Air Force Memorial Fund

The usual meeting of the Grants Sub-Committee of the Fund was held on January 8, 1931. Mrs. L. M. K. Pratt-Barlow was in the chair, and the other member of the Committee present was Air Commodore B. C. H. Drew, C.M.G. The Committee considered in all 13 cases, and made grants to the amount of £286 2s.

## R.A.F. SPORT RUGBY FOOTBALL

**R.A.F. v. Bristol.**—Bristol beat the R.A.F. at Bristol on Saturday, January 17, by a goal and two tries (11 points) to nil. The home side had Burland, Barrington, and Tucker absent playing for England at Twickenham, but still quite outplayed the R.A.F. and maintained pressure for the greater part of the game. The R.A.F. forwards were good in the loose, but the three-quarter line was indifferent. After 20 minutes the R.A.F. lost L.A.C. Reynolds, whose shoulder was dislocated. The teams were:—

**R.A.F.**—Pilot Officer G. H. Ievers (Worthy Down), back; Leading Aircraftman P. Robinson (Andover), Flying Officer M'Nicholl, Flight Lieutenant F. S. Hodder (Henlow), and Flight Lieutenant G. D. Harvey (Duxford), three-quarter backs; Flying Officer J. G. Llewellyn (No. 442 Flight), and Aircraftman James (Eastchurch), half-backs; Pilot Officer G. M. Gillan (Halton), Leading Aircraftman W. Reynolds (Henlow), Leading Aircraftman A. E. Simmons (Henlow), Flying Officer H. A. Constantine (Cranwell), Flying Officer J. Beaumont (Sealand), Flight Sergeant W. Kerby (Halton), Flight Lieutenant G. R. Beamish (Henlow), and Flying Officer B. J. Hurren (Gosport), forwards.

**Bristol.**—J. C. Watts, back; H. Sherman, D. W. Pickles, W. Moncrieffe, and A. W. Lillierap, three-quarter backs; E. R. Tucker and E. T. Collins, half-backs; C. Smith, W. C. Broome, F. Hollister, J. N. Hazell, D. Hicks, F. Tucker, P. G. Lambert, and J. Stone, forwards.

## THE SCHNEIDER TROPHY

(Continued from page 86.)

The following letter from Sir Philip Sassoon, Chairman of the Royal Aero Club, was received just as we were going to press.

"All those who are interested in British Aviation and are proud of the successes which our pilots and mechanics have won in past years, will have learned with deep concern of the refusal of the British Government to do anything to assist Great Britain to retain the Schneider Trophy.

"It is common knowledge that our victory in the last two contests has greatly raised the prestige of British Aviation all over the world, and has brought in its train many practical benefits, in the shape of export orders for British aircraft and increased employment for many different trades. Another victory would entitle us to hold the Trophy for all time, and would confirm for many years the leading position which our Aircraft Industry has won in the face of keen and constant competition. It would avoid, too, the inevitable suggestion of discourtesy which must accompany a refusal to compete, after the difficulties which last year arose concerning the conditions of the contest, have at last been solved.

"With these considerations in our minds, it seemed to the Committee of the Royal Aero Club that nothing ought to be left undone by them which might influence the Government to alter its decision to take no part in the race. Without Government assistance, it was clearly impossible for Great Britain to compete at all. Apart from the machines which took part in the last contest, and which are Government property, there are no machines in this country, built or building, fit to compete with those which the French and Italian Governments have built or are building for the race. There are no pilots in this country, except the Royal Air Force High Speed Flight, trained to fly such machines, and no facilities for training them outside the Royal Air Force.

"At the end of last year, as soon as the difficulties referred to had been settled, the Royal Aero Club had a Conference with the Air Ministry, and submitted their case, but our application was refused by the Cabinet at all points on the grounds of expense.

"The ground on which the refusal was based encouraged us to persevere. Convinced that moneyspent on the Schneider Trophy Contest would not be wasted, but invested, and would bring profits to British Aviation not to be measured in money only, we went again to the Secretary of State for Air. We asked him if the £80,000 were raised by the Royal Aero Club would the Government co-operate to the same extent and in the same manner as at the last contest. We persuaded the Secretary of State for Air to take our request to the Cabinet, and again we received a direct refusal.

"There, at present, the matter rests, and the Government's refusal can no longer solely be based on reasons of finance. It is difficult to understand what reason there can be for the Government's reiterated refusal. But, unless that refusal is withdrawn within the next few days, the Trophy and the contest must go Overseas, and the proud position this country enjoys as holder of the World Speed Records for Air, Land and Water will be ours no longer."

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## MODELS

## THE MODEL AIRCRAFT CLUB (T.M.A.C.)

**The Inauguration of the 10th and 12th Wings.**—A vast crowd of spectators, and an almost equal number of members, were present at the inaugural meeting of the 10th and 12th Wings on Wimbledon Common, on Sunday, January 18. Conditions were not particularly ideal, in fact, the wind was very treacherous from the models' point of view. Members arrived early and by 11 o'clock between 40 and 50 models had taken the air. A cinematograph film was taken of the proceedings, which consisted of the presentation of illuminated certificates to the Wing-Commanders, Mr. A. T. Willis and Mr. E. M. Dent. Considerable support was given as a send-off to the new wings by members from all parts of London. Special thanks are due to the Wing-Commander, Mr. Knight, and loyal members of the 4th Wing who arrived *en masse*. It is to be hoped that their visit will be returned by members of the new wings sometime during the coming season. A large variety of models were present, consisting of high and low wings, cabin-planes, military types, scale models and a model sail-plane brought along by Mr. Hughes. Some good flights were noticed, the visiting members having their fair share of altitude and duration. The morning's activities were brought to an abrupt end by rain; this, however, did not last long and those members who remained on the Common were able to continue in the afternoon.

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## Gipsy I Engines for Norwegian Army

The Norwegian Government has for some years held a licence from the de Havilland Aircraft Co. Ltd., to build Moth aeroplanes at their official factory at Lillestrom. The factory has just received a contract from the Norwegian Army for the supply of ten Moths and the de Havilland Aircraft Company has received instructions from their Norwegian agents to despatch 10 Gipsy I engines for these aircraft.

## Dieudonne Costes and K.L.G. Plugs

K.L.G. SPARKING PLUGS LIMITED, of Putney Vale, S.W.15, have received the following letter from Dieudonne Costes:—

"It is rather late, but with all sincerity I would like to thank you and congratulate you on the magnificent performance of the K.L.G. plugs which you supplied to us, and which equipped our motor for the crossing of the Atlantic from Paris—New York, also for the tour of the United States. These plugs did 150 hours without any default, and were still in perfect condition on arrival in Paris."

## PUBLICATIONS RECEIVED

*Air Questions and Answers.* By P. M. Henshaw. Aldershot and London: Gale and Polden, Ltd. Price 4s. 6d. net.  
*British Industries Fair, Olympia, London, February 16 to 27, 1931.* Catalogue, Overseas Edition. Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Price 1s.

*British Industries Fair, Birmingham, February 16 to 27, 1931.* Catalogue, Overseas Edition. Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Price 1s.

*Lang's Monthly.* January, 1931. R. T. Lang, Sells, Ltd., 168, Fleet Street, E.C.4.

*Air Navigation Directions, 1930 (A.N.D. 10).* H.M. Stationery Office, Kingsway, London, W.C.2. Price 6d. net.

*Airports: Their Location, Administration and Legal Basis.* By H. V. Hubbard, M. McClintock, and F. B. Williams. Harvard City Planning Studies, Vol. I. Harvard University Press, Cambridge, Mass., U.S.A. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. Price 15s. net.

*Modern Aircraft Fitted with Rolls-Royce Engines.* Rolls-Royce, Ltd., 14-15, Conduit Street, London, W.1.

*Aeronautical Research Committee Reports and Memoranda No. 1314 (Ae. 457).*—Some Approximate Solutions of the Boundary Layer Equations. By V. M. Falkner and S. W. Skan. April, 1930. H.M. Stationery Office, Kingsway, London, W.C.2. Price 2s. net.

*Mounted Photograph—"Metropolis."* Compagnie Aérienne Franco-Canadienne, 266, Rue St. Jacques, Montreal, Canada.

*The Medical Examination for Fitness for Flying (Royal Air Force and Civil).* Air Publication 130. H.M. Stationery Office, Kingsway, London, W.C.2. Price 9d. net.

*Illustrated Calendar for 1931.* Lightalloys, Ltd., Alpax Works, St. Leonard's Road, Willesden Junction, London, N.W.10.

*The Gauge.* Vol. 9. No. 3. December, 1930. Habershon and Sons, Ltd., Holmes Mills, Rotherham.

*Illustrated Date Calendar, 1931.* Deutsche Lufthansa A.G., Lindenstrasse 35, Berlin, S.W.68.

*British Aircraft Illustrated.* By C. A. Sims. London: A. and C. Black, Ltd. Price 3s. 6d. net.

*Aviaticus Jahrbuch der deutschen Luftfahrt 1931.* Union Deutsche Verlagsgesellschaft, Zweigniederlassung, Berlin, S.W.19. Price RM. 12.

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## AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

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Published January 22, 1931

- 22,166. CLAUDE NEON LIGHTS INC. Beam beacons. (340,229).  
27,789. TELEPHONE MANUFACTURING CO. (1929) LTD., and F. B. HEALEY. Telephone apparatus for use in aircraft. (340,273.)  
32,519. AIRCRAFT IMPROVEMENT CORPORATION. Aeroplanes. (340,355).

## APPLIED FOR IN 1930

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456. G. R. SCHLÄFLI. Aircraft. (340,414.)  
7,505. D. NAPIER AND SON, LTD., J. M. THOMAS and H. G. HARLEY. Rotors. (340,450.)  
16,731. J. and J. HEYDE. Range and height finders. (340,468.)  
18,614. W. KIWULL and E. KRAFFT. Apparatus for taking up and setting down floating bodies, particularly aircraft. (340,469.)

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